AGREEMENT BETWEEN THE COUNTY OF SAN MATEO AND CLERITY SOLUTIONS, INC.

THIS AGREEMENT, entered into this _____ day of _____ , 20_____, by and between the COUNTY OF SAN MATEO, hereinafter called "County," and CLERITY SOLUTIONS, INC., hereinafter called "Contractor";

W I T N E S S E T H:

WHEREAS, pursuant to Government Code Section 31000, County may contract with independent contractors for the furnishing of such services to or for County or any Department thereof; and

WHEREAS, it is necessary and desirable that Contractor be retained for the purpose of the conversion and migration of the County's Criminal Justice Information System (CJIS) off of the County's current mainframe platform;

NOW, THEREFORE, IT IS HEREBY AGREED BY THE PARTIES HERETO AS FOLLOWS:

1.   Exhibits and Attachments

The following exhibits and attachments are included hereto and incorporated by reference herein:

Exhibit A—Services/SOW
Exhibit B—Payments and Rates
Attachment H—HIPAA Business Associate requirements
Appendix 1 – XLS Stylesheet
Appendix 2 – XML Data
Appendix 3 – Project Requirements
Appendix 4 – Task List Effort
Appendix 5 – CICS Terminal ID/IP Address Requirements
Appendix 6 – DataQueries and Dialogs
Appendix 7 – Interfaces
Appendix 8 – Courts ODBC Usage
Appendix 9 – Courts ODBC Usage
Appendix 10 – Infrastructure
Appendix 11 – User Acceptance Testing
Appendix 12 – Project Payment Schedule

2. Services to be performed by Contractor

In consideration of the payments set forth herein and in Exhibit "B," Contractor shall perform services for County in accordance with the terms, conditions, and specifications set forth herein and in Exhibit "A."

3. Payments

In consideration of the services provided by Contractor in accordance with all terms, conditions, and specifications set forth herein and in Exhibit "A," County shall make payment to Contractor based on the rates and in the manner specified in Exhibit "B." The County reserves the right to withhold payment if the County determines that the quantity or quality of the work performed is unacceptable. In no event shall the County's total fiscal obligation under this Agreement exceed THREE MILLION SEVEN HUNDRED TWENTY NINE THOUSAND TWO HUNDRED SIXTY SEVEN DOLLARS [$3,729,267].

4. Term and Termination

Subject to compliance with all terms and conditions, the term of this Agreement shall be from OCTOBER 2, 2007 through OCTOBER 1, 2008.

    A. In the event of a default or breach by the County in observance or performance of any term or condition of this Agreement, Contractor will notify the County in writing of said default or breach. If the County fails to remedy the default or breach to Contractor's satisfaction within 30 days, Contractor reserves the right to terminate the Agreement. Subject to availability of funding, Contractor shall be entitled to receive payment for work/services provided prior to termination of the Agreement. Such payment shall be for all work done through the date of termination calculated on a time and material basis at the rate outlined in the Agreement.

    B. This Agreement may be terminated by the County at any time with thirty (30) day written notice, subject to the completion of the following Cure Notice process.

If at any time a major milestone, consisting of the County's ability to begin testing the migrated applications or the end of the project, is found to be greater than 9% overdue or 9% over the cost originally estimated plus any approved change orders, the County may issue a Cure Notice. Upon receipt of a Cure Notice, Contractor has 10 business days to respond to this Notice by delivering a plan, acceptable to the County, outlining how the time and cost exceeding the 9% can be recovered to get back within the 9% allowed deviation ("Cure Notice Plan").

Any approved changes to scope that arise during the project will require additional time and cost not included in the base plan (as outlined in the Statement of Work). These changes will be added onto the baseline cost and dates before applying the 9% rule.

1. If Contractor fails to provide an accepted Cure Notice Plan, then the County will have the right to cancel the project. If, based on Contractor's failure to submit such a Cure Notice Plan, the County determines that they want to cancel the remaining project, the County will pay to Contractor for:
   - any outstanding monies due on all software, hardware and other third party products Contractor delivered to the County,
   - any outstanding monies due on all software, hardware and other third party products Contractor has ordered and cannot cancel without penalty, and
   - any outstanding monies due for all work done through the date of the notice calculated on a time and material basis at the rate outlined in the Agreement.
2. If the County accepts the Contractor's Cure Notice Plan, the County will provide Contractor with the opportunity to meet the Cure Notice Plan. The accepted Cure Notice Plan will become the new plan and will be subject to the same 9% deviation for the remainder of the project or a New Cure Notice will be presented.

If Contractor presents such a Cure Notice Plan to get back into line with the project schedule within the 9% deviation, and the County still elects to terminate the Agreement, the County will pay Contractor for:
   - any outstanding monies due on all software, hardware and other third party products Contractor delivered to the County,
   - any outstanding monies due on all software, hardware and other third party products Clerity has already ordered and cannot be cancelled without penalty,
   - any outstanding monies due for all work done through the date of termination calculated on a time and material basis at the rate outlined in the Agreement, and ten (10) business days paid at the standard hourly rates in this Agreement for each person assigned to the project.

C. Upon termination, all finished or unfinished documents, data, studies, maps, photographs, reports, and materials (hereafter referred to as materials) prepared by Contractor under this Agreement shall become the property of the County and shall be promptly delivered to the County. Upon termination, the Contractor may make and retain a copy of such materials.

5. Availability of Funds

The County may terminate this Agreement or a portion of the services referenced in the Attachments and Exhibits based upon unavailability of Federal, State, or County funds, by providing written notice to Contractor as soon as is reasonably possible after the County learns of said unavailability of funding.

6. Relationship of Parties

Contractor agrees and understands that the work/services performed under this Agreement are performed as an independent Contractor and not as an employee of the County and that Contractor acquires none of the rights, privileges, powers, or advantages of County employees.

7. Hold Harmless

Contractor shall indemnify and save harmless County, its officers, agents, employees, and servants from all claims, suits, or actions of every name, kind, and description, brought for, or on account of: (A) injuries to or death of any person, including Contractor, or (B) damage to any property of any kind whatsoever and to whomsoever belonging, (C) any sanctions, penalties, or claims of damages resulting from Contractor's failure to comply with the requirements set forth in the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and all Federal regulations promulgated thereunder, as amended, or (D) any other loss or cost, including but not limited to, that caused by the concurrent active or passive negligence of County, its officers, agents, employees, or servants, resulting from the performance of any work required of Contractor or payments made pursuant to this Agreement, provided that this shall not apply to injuries or damage for which County has been found in a court of competent jurisdiction to be solely liable by reason of its own negligence or willful misconduct.

The duty of Contractor to indemnify and save harmless as set forth herein shall include the duty to defend as set forth in Section 2778 of the California Civil Code.

8. Assignability and Subcontracting

Contractor shall not assign this Agreement or any portion thereof to a third party or subcontract with a third party to provide services required by Contractor under this Agreement without the prior written consent of County. Any such assignment or subcontract without the County's prior written consent shall give County the right to automatically and immediately terminate this Agreement.

9. Insurance

The Contractor shall not commence work or be required to commence work under this Agreement unless and until all insurance required under this paragraph has been obtained and such insurance has been approved by County's Risk Manager, and Contractor shall use diligence to obtain such insurance and to obtain such approval. The Contractor shall furnish the Information Services Department with certificates of insurance evidencing the required coverage, and there shall be a specific contractual liability endorsement extending the Contractor's coverage to include the contractual liability assumed by the Contractor pursuant to this Agreement. These certificates shall specify or be endorsed to provide that thirty (30) days' notice must be given, in writing, to the Chief Information Officer of any pending change in the limits of liability or of any cancellation or modification of the policy.

(A) **Worker's Compensation and Employer's Liability Insurance** The Contractor shall have in effect, during the entire life of this Agreement, Workers' Compensation and Employer's Liability Insurance providing full statutory coverage. In signing this Agreement, the Contractor certifies, as required by Section 1861 of the California Labor Code, that it is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of the Code, and will comply with such provisions before commencing the performance of the work of this Agreement.

(B) **Liability Insurance** The Contractor shall take out and maintain, during the life of this Agreement, such Bodily Injury Liability and Property Damage Liability Insurance as shall protect Contractor while performing work covered by this Agreement from any and all claims for damages for bodily injury, including accidental death, as well as any and all claims for property damage which may arise from Contractor's operations under this Agreement, whether such operations be by Contractor or by any sub-contractor or by anyone directly or indirectly employed by either of them. Such insurance shall be combined single limit bodily injury and property damage for each occurrence and shall be not less than the amount specified below.

Such insurance shall include:
(1) Comprehensive General Liability $1,000,000
(2) Motor Vehicle Liability Insurance $1,000,000
(3) Professional Liability $1,000,000

County and its officers, agents, employees and servants shall be named as additional insured on any such policies of insurance, which shall also contain a provision that the insurance afforded thereby to the County, its officers, agents, employees, and servants shall be primary insurance to the full limits of liability of the policy, and that if the County or its officers and employees have other insurance against the loss covered by such a policy, such other insurance shall be excess insurance only.

In the event of the breach of any provision of this section, or in the event any notice is received which indicates any required insurance coverage will be diminished or canceled, the County of San Mateo at its option, may, notwithstanding any other provision of this Agreement to the contrary, immediately declare a material breach of this Agreement and suspend all further work pursuant to this Agreement.

10. Compliance with Laws; Payment of Permits/Licenses

All services to be performed by Contractor pursuant to this Agreement shall be performed in accordance with all applicable Federal, State, County, and municipal laws, ordinances, and regulations, including, but not limited to, the Health Insurance Portability and Accountability Act of 1996 (HIPAA), and the Federal Regulations promulgated thereunder, as amended, and will comply with the Business Associate requirements set forth in Attachment "H," and the Americans with Disabilities Act of 1990, as amended. Such services shall also be performed in accordance with all applicable ordinances and regulations, including, but not limited to, appropriate licensure, certification regulations, provisions pertaining to confidentiality of records, and applicable quality assurance regulations.

In the event of a conflict between the terms of this Agreement and State, Federal, County, or municipal law or regulations, the requirements of the applicable law will take precedence over the requirements set forth in this Agreement.

Contractor will timely and accurately complete, sign, and submit all necessary documentation of compliance.

11. Non-Discrimination

A. *Section 504 applies only to Contractors who are providing services to members of the public.* Contractor shall comply with § 504 of the Rehabilitation Act of 1973, which provides that no otherwise qualified handicapped individual shall, solely by reason of a disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination in the performance of this Agreement.

B. *General non-discrimination.* No person shall, on the grounds of race, color, religion, ancestry, gender, age (over 40), national origin, medical condition (cancer), physical or mental disability, sexual orientation, pregnancy, childbirth or related medical condition, marital status, or political affiliation be denied any benefits or be subjected to discrimination under this Agreement.

C. *Equal employment opportunity.* Contractor shall ensure equal employment opportunity based on objective standards of recruitment, classification, selection, promotion, compensation, performance evaluation, and management relations for all employees under this Agreement. Contractor's equal employment policies shall be made available to County of San Mateo upon request.

D. *Violation of Non-discrimination provisions.* Violation of the non-discrimination provisions of this Agreement shall be considered a breach of this Agreement and subject the Contractor to penalties, to be determined by the County Manager, including but not limited to

      1) termination of this Agreement;
      2) disqualification of the Contractor from bidding on or being awarded a
      County contract for a period of up to 3 years;

3) liquidated damages of $2,500 per violation;
4) imposition of other appropriate contractual and civil remedies and sanctions, as determined by the County Manager.

To effectuate the provisions of this section, the County Manager shall have the authority to examine Contractor's employment records with respect to compliance with this paragraph and/or to set off all or any portion of the amount described in this paragraph against amounts due to Contractor under this Agreement or any other Contract between Contractor and County.

Contractor shall report to the County Manager the filing by any person in any court of any complaint of discrimination or the filing by any person of any and all charges with the Equal Employment Opportunity Commission, the Fair Employment and Housing Commission, or any other entity charged with the investigation of allegations within 30 days of such filing, provided that within such 30 days such entity has not notified Contractor that such charges are dismissed or otherwise unfounded. Such notification shall include the name of the complainant, a copy of such complaint, and a description of the circumstance. Contractor shall provide County with a copy of their response to the Complaint when filed.

E. *Compliance with Equal Benefits Ordinance.* With respect to the provision of employee benefits, Contractor shall comply with the County Ordinance which prohibits contractors from discriminating in the provision of employee benefits between an employee with a domestic partner and an employee with a spouse.
F. The Contractor shall comply fully with the non-discrimination requirements required by 41 CFR 60-741.5(a), which is incorporated as if fully set forth herein.
G. *Compliance with Contractor Employee Jury Service Ordinance.* Contractor shall comply with the County Ordinance with respect to provision of jury duty pay to employees and have and adhere to a written policy that provides that its employees shall receive from the Contractor, on an annual basis, no less than five days of regular pay for actual jury service in San Mateo County. The policy may provide that employees deposit any fees received for such jury service with the Contractor or that the Contractor deduct from the employee's regular pay the fees received for jury service.

12. Retention of Records, Right to Monitor and Audit

(a) Contractor shall maintain all required records for three (3) years after the County makes final payment and all other pending matters are closed, and shall be subject to the examination and/or audit of the County, a Federal grantor agency, and the State of California.

(b) Reporting and Record Keeping: Contractor shall comply with all program and fiscal reporting requirements set forth by appropriate Federal, State and local agencies, and as required by the County.

(c) Contractor agrees to provide to County, to any Federal or State department having monitoring or review authority, to County's authorized representatives, and/or their appropriate audit agencies upon reasonable notice, access to and the right to examine all records and documents necessary to determine compliance with relevant Federal, State, and local statutes, rules and regulations, and this Agreement, and to evaluate the quality, appropriateness, and timeliness of services performed.

13. Merger Clause

This Agreement, including the Exhibits, Attachments, and Appendices attached hereto and incorporated herein by reference, constitutes the sole Agreement of the parties hereto and correctly states the rights, duties, and obligations of each party as of this Agreement's date. Any prior agreement, promises, negotiations, or representations between the parties not expressly stated in this document are not binding. All subsequent modifications shall be in writing and signed by the parties. In the event of a conflict between the terms, conditions, or specifications set forth herein and those in the Exhibits, Attachments, and Appendices attached hereto, the terms, conditions, or specifications set forth herein shall prevail.

14. Controlling Law

The validity of this Agreement and of its terms or provisions, as well as the rights and duties of the parties hereunder, the interpretation, and performance of this Agreement shall be governed by the laws of the State of California.

15. Notices

Any notice, request, demand, or other communication required or permitted hereunder shall be deemed to be properly given when deposited in the United State mail, postage prepaid, or when deposited with a public telegraph company for transmittal, charges prepaid, addressed to:

In the case of County, to:
San Mateo County
Information Services Department
Chris Flatmoe, CIO/Director
455 County Center, 3rd Floor
Redwood City, CA 94063

In the case of Contractor, to:
Clerity Solutions, Inc.
One Lincoln Centre
18 West 140 Butterfield Road, 15th Floor
Oakbrook Terrace, IL 60181

IN WITNESS WHEREOF, the parties hereto, by their duly authorized representatives, have affixed their hands.

COUNTY OF SAN MATEO
A Political Sub-division of the
State of California

By:_____
Rose Jacobs Gibson, President, Board of Supervisors,
San Mateo County

Date:_____

ATTEST:

By:_____
Clerk of Said Board

Clerity Solutions, Inc.

_____
Contractor's Signature

Date:_____

EXHIBIT A - SERVICES

AGREEMENT BETWEEN COUNTY OF SAN MATEO
AND CLERITY SOLUTIONS, INC.

In consideration of the payments set forth in Exhibit "B", Contractor shall provide the following services below and described in the attached SOW:

1. ## SCOPE OF WORK

   In this engagement, Contractor will provide the County with a Mainframe Application Re-host Implementation Service that will re-host the Criminal Justice Information System or CJIS ("Application") to the IBM pSeries AIX operating system platform ("Service").

   The only tasks and deliverables Contractor will undertake or deliver in providing the Service are those specifically set forth in the Statement of Work ("SOW"). Unless specifically stated otherwise, the total deliverables outlined in the SOW are provided based on work actually performed, not to exceed total milestone payments as indicated. The Statement of Work is issued pursuant to the terms and conditions of the Agreement between Contractor and the County as defined in Services Agreement between the County and Contractor. ("Agreement"). Agreement is based upon the County's template.

   Should either Contractor or County want to change any deliverable or otherwise alter the SOW, each party must follow standard change control procedures described in the Statement of Work. Contractor will complete all work authorized under change control on a time-and-materials or fixed price basis, as is appropriate.

   The methods and techniques used to provide services to the County are within the Contractor's discretion, but subject to County Information Services Department's technology policies, guidelines, and requirements. The amount of time, specific hours, and location of the performance of Contractor's services is also left to the Contractor's discretion provided that Contractor coordinates with County departments as needed.

Statement of Work

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1. Service: Mainframe Application Rehost

In this engagement, Clerity Solutions, Inc. ("Contractor") will provide County of San Mateo ("County of San Mateo" or "County") with a Mainframe Application Rehost Implementation Service that will rehost Criminal Justice Information System or CJIS ("Application") to the IBM pSeries AIX operating system platform ("Service").

The only tasks and deliverables Contractor will undertake or deliver in providing the Service are those specifically set forth in this statement of work ("SOW"). Unless specifically stated otherwise, the total deliverables outlined in the SOW are provided based on work actually performed, not to exceed total milestone payments as indicated. This Statement of Work is issued pursuant to the terms and conditions of the Agreement between Contractor and County as defined in Services Agreement between the County of San Mateo and Clerity Solutions, Inc. ("Agreement"). Agreement is based upon amended County template.

Should either Contractor or County want to change any deliverable or otherwise alter the SOW, each party must follow standard change control procedures described in this Statement of Work. Contractor will complete all work authorized under change control on a time-and-materials or fixed price basis, as is appropriate.

Contractor will complete the Service by performing the following activities:
- Service Initiation – Project Preparation and Set-up
- Operational Audit
- Infrastructure Audit
- Project Planning
- Baseline Planning Preparation
- Mainframe Application Source and Data Migration Rehost
- Database Administration Migration
- Database Administration Staff Augmentation
- General Infrastructure Implementation
- Operational Implementation
- System Administration Staff Augmentation
- Regression Testing
- Stress Testing
- Customer Acceptance Testing
- Production Cutover Assistance
- Product Training
- Project Management
- County Functional Team Participation
- Service Closure - Implementation

Summary of Service Deliverables:

- Organizational Plan
- Operational Reference Architecture document including a list of software components to be used for the target platform for the rehosted application.
- Infrastructure Reference Architecture document
- Project Plan
- Test Plan Template
- Test Case Template
- Notes in review of County generated Test Plan and Test Cases
- List of Detected Missing / Unused Application Source Inventory Components
- Initial UniKix TPE tables production region configuration
- Migrated COBOL programs (also including former Assembler, IDEAL, and Easytrieve Plus programs)
- Migrated BMS maps
- Converted Joblib, Proclib, Cntllib and Parmlib members
- An initial file map
- Data conversion programs for VSAM and Sequential files
- Customized conversion scripts to run the data conversion programs
- Data conversion programs / scripts for Datacom files
- Installation of UniKix TPE and UniKix BPE on the County's IBM pSeries AIX operating system
- Production Oracle Database(s)
- Test Oracle Database(s).
- QA Oracle Database(s)
- Installed hardware for production, backup, development/test, quality assurance, workflow scheduling and print queue management and distribution environments
- Assist County in integrating existing IBM SAN and Storage environments to above servers
- Installed operating system for above servers
- File systems defined and setup on shared disk array in support of above servers
- Installed Clerity Solutions software products and other supporting third party software products as defined within this Statement of Work
- Converted Batch Schedule
- Configured Print Distribution Environment
- Test Reports
- Responses to Test Reports with discrepancies.
- Updated Rehosted Application Source
- Production Cutover Templates
- Production Cutover Plan Comments
- Application running in production
- UniKix TPE Application Development / Administration training materials
- UniKix BPE Application Development / Administration training materials

- DataKom training materials
- Status Reports
- Updated Project Plan
- Updated Issue / Risk Log
- Updated Action Item List
- Specific documentation resulting from team activities
- Service Completion Form

1.1. Activity: Service Initiation – Project Preparation and Set-up

The objective of this Activity is to confirm the goals of the project in regards to the contractual agreement, the budget and timetable for the project with the complete project team. The Contractor project manager initiates and conducts a set of meetings including all of the parties involved in the project to confirm expectations of each member of the team. Those team members include both the County's as well as Contractor's migration team as assigned to the County project. In addition to the software development staff of both parties, we expect members of the infrastructure support team to be involved as well.

Contractor and County will review and acknowledge each of the following items when appropriate:

- Project goals
- Contractual commitments
- Project budget and tracking methodology
- Project timetable
- Project management tools and methodology
- Source code management tools and methodology
- Defect tracking tools and methodology
- Commitment of team members and resources both human and physical
- Security Clearance for Contractor Project participants
- Software Conversion Plan including detailed planning of steps, environment and technical requirements and assignment of resources as appropriate
- Contractor will set up a migration environment at the Clerity Solutions Migration Center specific to the level of contracted services.

1.1.1 Activity Input(s)
- SOW
- Project Participant List
- Role Requirements

1.1.2 Activity Deliverable(s)
- Organizational Plan

1.2. Activity: Project Plan

The objective of this Activity is to create the detailed project plan for the Contractor part of the overall project.

Contractor will develop a project plan for each of the Program Requirements listed in **Appendix 3 – Project Requirements**. County of San Mateo will provide information and assistance.

Each project must include a project task Excel spreadsheet (**Appendix 4**) and XML project data file (**Appendices 1 and 2**). The County will provide the template for the spreadsheet.

Weekly Reporting

Contractor will update the project task spreadsheet and project data file on a weekly basis and FTP these files to a specified County server.

Contractor will work with the client using our methodology and project planning boilerplate documents to customize the appropriate project plan for the engagement. This process will focus on plans involving Contractor resources. During this project plan creation, appropriate roles and responsibilities will be discussed and assigned across the combined teams of the County, Contractor and the third-party hardware and software vendors engaged in the project.

1.2.1. Activity Input(s)

- SOW
- Mainframe Application Rehost Source Asset Cataloging Report
- Mainframe Application Rehost Source Audit Assessment Report
- Mainframe Application Rehost Post Assessment Technical Feasibility Report
- Project Participant List
- Role Requirements

1.2.2. Activity Deliverable(s)

- Project Plan
- Project Status Spreadsheet
- Project Status XML file

1.3. Activity: Project Management

The following description applies to each requirement listed in **Appendix 3.** It also applies to the entire migration project. The objective of this Activity is to manage Contractor scope, resources, schedule, deliverables, and process of the Service.

Contractor project management will coordinate the efforts of the Contractor migration specialists in working through the migration tasks and provide a project focal point for both the County and Contractor.

Projects often require alterations to scope, objective, schedule or other factors from those initially planned or proposed. Should County want to change any Deliverable, the Project Manager will follow standard change control procedures and will issue a Change Control Request form for all pending changes to the County Project Manager for authorization to proceed. The Change

Control form will include an estimate of the impact of the proposed change to the base schedule, deliverables, budget or other managed dimension of the Program. Changes may be requested explicitly by County, implicitly (e.g., reschedules or rework of previously-accepted deliverables), or be identified by the application migration team during the conduct of this engagement. The application migration team will perform an impact analysis as quickly as possible following identification or request.

The Contractor project manager communicates with the County project manager regarding project inventory issues, project/task scope and issues, interrelated dependencies, and overall project progress.

Communication is a key element of successful project management. The Contractor project manager uses various communication methods and tools throughout the project to ensure clear understanding of schedules, expectations, progress and risks.

These include, but are not limited to:
- Regular Status Meetings
- Status Reports / Meeting Minutes
- Updated Project Plan (Microsoft Project)
- Updated Issue / Risk Log
- Updated Action Item List
- Updated Project Status Spreadsheet
- Updated Project Status XML File

A detailed project plan will be created, reviewed, and updated regularly.

1.3.1. Activity Input(s)
- Service Agreement Contract
- SOW

1.3.2. Activity Deliverable(s)
- Status Reports
- Updated Project Plan
- Updated Issue / Risk Log
- Updated Action Item List
- Updated Project Status Spreadsheet
- Updated Project Status XML File

1.4. Activity: Functional Contact Identification

The objective of this Activity is to provide contacts within both Contractor and County teams to address specific identified functional areas.

Contractor and County functional area contacts will be the focal points for the specified area. This identification is not meant to add project overhead, but is intended to optimize communication and attention in various functional areas.

Functional contacts must still go through the change control process if project scope / effort changes are desired.

1.4.1. Activity Input(s)

- Functional Contact Definitions and Roles

1.4.2. Activity Deliverable(s)

- None specific for this Activity

1.5. Activity: Operational Audit

The objectives of this Activity are to:

- Understand County's current software products used on the mainframe and current standards and procedures for operating/administering these mainframe software components. the County will be required to provide to Contractor all information relating to their current standards and procedures within 10 days of signing of this Agreement. If additional information or changes to what has been provided in this time period are required later in the project and such information causes Contractor to incur additional time on the project, appropriate change orders will be executed.
- Understand County's standard software products as well as standards and procedures deployed for other applications on open system platforms
- Work with County on identifying software components to fully meet requirements for rehosted application deployment
- Determine whether any migration of non-application components around software products is required when rehosting the application and what that migration will entail
- Estimate effort and describe tasks for changing operational / administrative procedures to fit in the IBM pSeries AIX operating system environment

The County will be required to provide to Contractor all information relevant to this section (including current standards and procedures) within 10 days of signing of this Agreement. If additional information or changes to what has been provided in this time period are required later in the project and such information causes Contractor to incur additional time on the project, appropriate change orders may be required.

County will provide to Contractor a list of all Operational Software components (sort, print distribution facilities, batch scheduler, system/storage/network management facilities, back-up/ restore, application development and version/change control products, and other utility products) used in the existing mainframe environment along with other operational/administrative considerations requiring attention.

County will provide a list of any preferred software for the target AIX operating system platforms.

The Contractor migration team will work with the County to ensure that all key areas have been identified and are ready to be addressed in the target distributed environment. Contractor and County will work together to discuss the requirements to be met in the target distributed

environment via a combination of onsite and offsite meetings. Contractor will utilize a series of forms including Contractor's Application Summary Form, Third Party Software Mapping Documents, etc to help organize and draw out the appropriate information.

Contractor will provide consultative services in working with the County to evaluate the Tivoli Workload Scheduler for suitability in meeting San Mateo County requirements.

Contractor will work with the County to identify any existing External Interfaces. [Note: This does not include new External Interface requirements resulting from some application requesting data from a data file or from an application service that resides on the mainframe from which the CJIS application is leaving.]

Contractor will work with County to evaluate and to make recommendations/plans on the expected Application Development lifecycle process, software, and access control as it pertains to text editing, source change/version control, testing/debugging, and propagation/promotion across development, quality assurance, and production system environments.

Contractor will then work with County to build a customized Operational Reference Architecture consisting of a one-to-one mapping of operational requirements to the appropriate distributed system target. This will include appropriate configuration and pricing information as well as professional services estimates and statement of work documents for implementing the associated operational requirements.

For this engagement, County will select, purchase, and acquire software and relevant software licenses. Contractor will install software products as defined in the Operational Implementation Activity.

1.5.1. Activity Input(s)

- Completed Infrastructure Worksheet
- List of all software products in use that support the application being rehosted
- List of any County software standards, recommended practices, or software usage on open system platforms

1.5.2. Activity Deliverable(s)

- Operational Reference Architecture document including a list of software components (as agreed with County) for the target platform to be used for the rehosted application

1.6. Activity: Infrastructure Audit

The objective of this Activity is

- Understand County current mainframe hardware components
- Understand County open system platform requirements
- Work with County on identifying hardware components to meet requirements for the rehosted application deployment.

County will provide to Contractor a list of all Infrastructure related components such as hardware types and models along with the associated performance measurements of the applications running within the environment. The more detailed the performance measurements, the more

accurate the results of the Infrastructure Audit will be.

The Contractor migration team will work with the County to determine the most beneficial target platform using a combination of criteria including existing distributed system experience at the County site, current the County distributed environment, corporate direction, performance requirements for migrated environment and more. Contractor will ensure that all key areas have been identified and are positioned to be addressed in the target distributed environment. Contractor and County will work together to discuss the requirements to be met in the target distributed environment via a combination of onsite and offsite meetings.

During this process, Contractor will assist the County in building a customized Infrastructure Reference Architecture consisting of a one-to-one mapping of infrastructure requirements to the appropriate distributed system target. This deliverable will also include appropriate configuration and pricing information as well as professional services estimates and statement of work documents for implementing the associated infrastructure requirements.

For this engagement, County will select, purchase, and acquire all hardware elements. Contractor will install hardware components as defined in the General Infrastructure Implementation Activity.

1.6.1. Activity Input(s)

- Completed Infrastructure Worksheet

1.6.2. Activity Deliverable(s)

- Infrastructure Reference Architecture document

1.7.   Activity: Baseline Planning Preparation

The objective of the Activity is to prepare for testing the rehosted application on the target IBM pSeries AIX operating system platform.

Contractor will assist County in the creation of an appropriate plan for ensuring the proper testing and validation of the migrated applications. The test plan will include the process for selecting and providing test data for the project and moving the Asset components including source code and test data elements to a secure location on the mainframe and freezing them in their current state. It will also include a process whereby the County compiles, links and executes these applications in the mainframe environment to generate results to be compared against the target environment following the migration process. The documents will also identify how the source modules and test data will be transferred to the target environment to ensure consistency and proper formatting. Finally, this process will identify the process by which the test process will be documented and performed to generate the results to compare for functional and performance equivalence between the mainframe and target environments.

Specifically, the Activity will include the following tasks:

Contractor will meet with County to discuss testing process and to provide test plan and test case templates as a basis for capturing the plan and various test cases.

Contractor will:

- Provide testing process overview
- Provide test plan and test case templates
- Review expectations for defining test plan and test cases

Contractor will meet with County to discuss Stress Test requirements. These discussions will focus on two types of testing:

- Performance tests

The objective of Performance tests is to validate that the AIX-based response time and throughput of representative application component execution meet or are better than running the same application components on the mainframe.

- Operational Exception tests

The objective of the Operational Exception tests is to validate readiness of the operational staff, processes, systems, etc. for handling exception conditions that may arise.

Specific test case categories will be determined as part of these discussions. Possible Test Cases could be constructed to address:

- o Recovery from a system outage or application outage due to environment, hardware, software, or operational conditions
- o Replacing failing application program component while reverting to previous application component version
- o Recovery from a failed storage device

County will create test plan and test cases documentation. Test case documentation will contain all of the information required to set-up, execute, and validate the test results.

County will use Contractor test tools to capture the input and output messages used to drive CICS application component tests in County-defined Test Cases in the Test Plan.

In addition, Contractor will identify transaction input load driver tool(s) for Performance Stress Testing. County will provide test input and will use the tool to drive the Performance Stress Testing on the mainframe.

Contractor will assist and consult with County about Contractor provided transaction input load driver and test tools during the Activity.

County will validate the test cases on the mainframe. This validation will use the same source asset to be migrated with a defined initial state and input and will capture a defined completed state (data files) and associated output (e.g., output messages, reports) to be used in subsequent validation on the target IBM pSeries AIX operating system platform.

Contractor will review all test plan / test case documents for tests that Contractor is responsible to implement (up to a specified maximum number of test cases) and provide feedback to County up to a previously agreed amount of times for any specific test case. If any test plan / test case document is not complete after these reviews, a project change order is required to identify additional effort, cost, and duration associated with further reviews in preparation and readiness for testing.

1.7.1.Activity Input(s)

- Completed Asset Cataloging Activity

1.7.2.Activity Deliverable(s)

- Test Plan Template
- Test Case Template
- Notes in review of County generated Test Plan and Test Cases

1.8. Activity: Familiarization with CJIS Security Requirements

System access security to the new converted/migrated CJIS system must be reasonably equivalent to the security currently in place for the mainframe hosted CJIS system. To that end, system access security for the rehosted CJIS application will include:
- AIX / UniKix TPE sign-on (User has been authorized for system access)
- CJIS internal sign-on security (User ID matches CJIS security table user entry)
- CJIS functional position/location (terminal) authorization
- Terminal is authorized for user's functional position

User Access Authorization:

Only authorized CJIS users will be able initiate a UniKix TPE terminal session that would permit them to sign-on using their UniKix TPE user ID (auto-initiate a CESN transaction for example). The user's UniKix TPE ID and terminal ID will be passed to the CJIS application system for use in subsequent internal security checks.

When users connect to the migrated CJIS system, they must connect with the same terminal ID each and every time. Certain ISD personnel currently are able to initiate multiple terminal sessions (from the same IP address) in the TEST and QA CJIS environments for purposes of trouble shooting and testing CJIS applications. This capability must be included in the new system and is to include the Production region to provide this capability to the CJIS user community should the CJIS owning departments opt to modify the security rules.

CJIS Team members must be able to directly access Oracle data for those instances where CJIS data must be manually corrected in order to resolve production problems.

Table level security must be implemented within the Oracle environment in order to restrict user access to certain tables via ODBC, or other dynamic query type access.

Terminal ID / Static IP Address Requirements:

Terminal and printer ID's and LU names currently assigned in the existing CJIS system will be carried forward into the new converted CJIS.

Contractor will modify the UniKix TPE product so that it will:
- Map the same terminal ID, as currently assigned in the CJIS CICS system, to the user's IP address.
- Map multiple terminal ID's (sessions) to the same IP address as defined in the TCT or other designated configuration table. Terminals permitted to have multiple sessions will be defined in the TCT or other designated table used for this purpose as determined by Contractor when UniKix TPE is modified.

See: **CICS Terminal ID / IP Address Requirements Appendix 5**.

Data Center Infrastructure Requirements:

Primary and Secondary Application Servers:

CJIS application servers will be rack mounted in a secure rack within the County's data center.

These servers will reside on a pair of separate sub-networks dedicated to CJIS.

Primary and Secondary Database Servers:

The database servers will be rack mounted in a secure rack within the County's data center.

1.9. Activity: Mainframe Application Source and Data Migration Rehost

The objectives for the Application Source and Data Migration Rehost activity are to:

- Finalize the source and data components to be rehosted
- Adapt the County application to be compatible with the agreed upon target application execution environments on the IBM pSeries AIX operating system platform
- Create data conversion programs for conversion of flat file character data to ready the application for testing on the target IBM pSeries AIX operating system platform
- Provide transition from the migration environment to the County
- Provide Application Discrepancy Correction Assistance for any testing performed as part of this project

Source Audit and Setup

After an Application Rehost Source Audit Assessment has been completed with an Assessment Report and a Post Audit Assessment Technical Feasibility Report has been submitted to the County,

Contractor will:

- Set up the migration environment with Application Component inventory as defined by County during the Application Rehost Source Audit Assessment (which is required to be completed prior to this service).
- Assist County with reconciling the Application component inventory / asset to be migrated.

Conversion

Contractor will provide assistance to the County in the migration of their application to an open systems environment where Contractor products are used.

Contractor will:

CICS Table Conversion

Convert CICS tables to generate initial UniKix TPE tables for production region configuration

Program Source Conversion

All production level CJIS sources will be converted and migrated into the production source library on the target platform.

Program modules that were part of the pilot (proof of concept) will be discarded and will be freshly converted along with the complete source code asset.

Source code currently residing in the TEST.CJIS.SOURCE library (CA-Librarian) will be migrated to the test source library on the target platform, but not compiled.

Source code currently residing in the TEST.CJIS.JAIL.SOURCE library (CA-Librarian) will be migrated to a separate source library on the target platform designated for imported CJIS source. Corresponding files which were also imported and separated into PDS

members will likewise be migrated to similar members on the target platform. These files are:

TCJS.P0.KERN.JIS.DBASE
TCJS.P0.KERN.JIS.HELPTEXT
TCJS.P0.KERN.JIS.JCL
TCJS.P0.KERN.JIS.SPECS

- Migrate COBOL programs to address differences between the source and target environment so that programs will compile without material error in the IBM pSeries AIX operating system
- Convert Assembler programs to COBOL for the target environment so that programs will compile without material error in the IBM pSeries AIX operating system
- Convert IDEAL programs to COBOL (and IDEAL panels to BMS maps) for the target environment so that programs will compile without material error in the IBM pSeries AIX operating system
- Convert Easytrieve Plus programs to COBOL so that programs will compile without material error in the IBM pSeries AIX operating system

BMS Mapset Conversion

- Migrate BMS maps to address differences between the source and target environment so that maps will assemble without material error on the IBM pSeries AIX operating system and UniKix software platform

DataQuery Conversion

- Provide a CA-DataQuery to Oracle View translation for all static DataQuery inquiries. County will be able to use the View from various applications to access results of these static queries. Most DataQuery queries are dynamic. County will use selected tools to access dynamic queries and dialogs. These tools will include lookup function, add function, delete function and update function. See **Appendix 6** for a list of DataQueries and Dialogs to be converted.

Job Control Language (JCL) Conversion

For each environment, Production, QA and Test, Contractor will:

- Convert Joblib, Proclib, Cntllib and Parmlib members
  - Create an initial file map from the JCL
  - Convert sort parameters to operate with UNIX Syncsort DMExpress or IRI CoSort (depending upon County selection)
  - Replace utilities as depicted in the Source Audit Assessment
  - Translate Joblib, Proclib, Cntllib and Parmlib members to UniKix Batch Processing Environment macros

- Establish data conversion procedures for VSAM and sequential files including GDG datasets for each environment (Production, QA and Test):
  - Generate data conversion programs
  - Customize conversion scripts
  - Generate scripts to sort and load converted data for VSAM files

o Test data conversion programs and conversion scripts with a small amount of data that includes a separate file for each unique file data record layout

Data Conversion for Files

In CJIS, flat files are used predominately as work files for the duration of a batch job. Because of this, no initializing data conversion will be necessary for these files.

There are two (2) VSAM files for each environment (Production, QA and Test) needing conversion:

PCJS.V0.JBSIS.DATA.MATRIX is created initially by job stream CJCJA105 invoking procedure CJCJA105. The VSAM file is Delete/Defined using IDCAMS and then loaded from file PCJS.S0.JBSIS.DATA.MATRIX.INITIAL.FILE using IDCAMS. This file must be converted to ASCII for the initial VSAM file load.

PCJS.O0.AWS.AGENCY.JURISDCT is created by job stream CJCJA206 invoking procedure CJCJP206.
PCJS.S0.GIS.BLKFACE is received using FTP and used to create the flat file used for the VSAM file load in Step 7. The creation of this VSAM file needs to be coordinated with the successful PCJS.S0.GIS.BLKFACE FTP interface test.

Dataset Naming Note

Dataset names for each environment have a unique high-level identifying node, which are as follows:

Production	PCJS
QA	QCJS
Test	TCJS

Files from each environment will be converted into their corresponding environment on the new AIX platform with dataset environment identification matching as closely as possible the original mainframe designations.

CJIS DMV Interface:

Contractor will replace the existing VTAM to VTAM methodology used in CJIS Assembler modules J28212 and J28213 to transmit data to and receive data from the Department of Motor Vehicles in job stream CJJJA826 with a supported DMV connectivity option for LU2, LU6.2, or other supported connection.
See **Appendix 7 — Interfaces**.

CJIS AWS Interface:

Contractor will replicate the existing EZASOKET methodology used by CJIS COBOL modules J16115, J16117, J16122 and J16125 to transmit data to and receive data from the Alameda Warrant System in job streams CJSJ5115 and CJSJ5117.
See **Appendix 7 — Interfaces**.

CJIS SSA Interface:

Contractor will replicate the existing cassette creation methodology used to transmit data to the Social Security Administration in job stream CJJJA826.

CJIS FTP Interfaces:

Contractor will replicate the existing FTP Interfaces testing them with each of the various internal/external recipients.
See **Appendix 7 — Interfaces**.

Once the CJIS batch jobs that create the various CJIS FTP files are converted on the new system, run them and compare the resulting files field by field with those from the corresponding mainframe jobs.

The County will contact the various CJIS FTP file recipients and explain what we are doing. Contractor will provide background information and support to this effort.

The County will find out if they have a testing procedure in place. Contractor will provide background information and support to this effort.

For those sites with testing procedures in place:

The County will run the FTP jobs on the new CJIS system putting the new files into locations designated by the FTP recipients. Contractor will provide background information and support to this effort.

The County will ask the FTP recipients to process the new files using their test procedures and report the results back to the County of San Mateo. Contractor will provide background information and support to this effort.

Miscellaneous ODBC Connectivity:

The County Courts have several PC-based applications using a Computer Associates-based ODBC client to query either the production Datacom database or a copy / extract of the production Datacom database. See **Courts ODBC Usage Appendices 8 and 9** for more detail.

Oracle will replace Datacom on the IBM pSeries platform

The County is responsible for acquiring, installing an Oracle-compliant ODBC client. The County is responsible for adapting their applications to use the Oracle-compliant ODBC client.

Contractor will provide a data replication solution to copy / extract some or the entire production Oracle database.

Contractor will provide access to the Oracle production database and Oracle database copy / extract for authorized users submitting ODBC queries.

The County will test the applications using the ODBC client to access the Oracle database. Contractor will provide server side database support for this testing.

IP Address/Terminal ID Static Association Required

Contractor will agree to enhance the UniKix TPE software to provide additional identification and authentication features for an option to allow successful sign-on to occur if and only if a valid combination of the "user-id" name, "term-id" name, and the IP address fields are present with a connection that permits authorized access. Maximum connections from the same IP address may be limited based upon configuration parameters.

Access to the CJIS system over TCP/IP requires a static IP address AND four character

terminal ID. Additionally, CJIS support team members in ISD as well as the Systems Programmer require the ability to logon to TEST and QA regions multiple times simultaneously from the same machine (IP address).

With all user terminals and printers already assigned in the CJIS system, it is necessary to preserve those IP addresses and terminal/printer ID associations.

Users must not be required to configure their terminal emulation software with a terminal LU name or device name. Users also must not be required to enter their terminal ID or a device name when logging on.

When new terminals and printers are added to the system, the CJIS application S5321L, Maintain Terminal/Printer Data, within the UEMNTDA sub-menu, checks the CICS terminal table to determine if the terminal or printer exists before allowing the CJIS Data Administrator to add the device to the CJIS internal tables so it can then be used. This makes it necessary for CJIS to be able to check the CICS terminal table to ensure the terminal or printer has been installed.

With the above parameters in mind, one way to approach setting up a UniKix terminal table might be to create a table having the fields:

> IP_Address
> LU_Name
> Terminal_ID
> Term_Active_Flag

When a user connects to UniKix, their IP address would be located, and if the terminal active flag was not set, the terminal ID would be assigned to that session and the terminal active flag for the user's IP address would be set to indicate an active terminal session.

If the user subsequently connected a second time, the system would find the terminal active flag already set, so the subsequent entry in the table having the same IP address would be examined, and if the terminal active flag was not set, that terminal ID would be assigned to the session, and the terminal active flag set for that entry. If no other entries for the user's IP address existed in the table, the new session request would be rejected. For example:

IP Address	LU Name	Term	Act
10.35.50.120	TCP01110	P113	N
10.35.50.122	TCP01111	PGC8	Y
10.35.50.122	TCP01112	PGC9	Y
10.35.50.122	TCP01113	PGD0	N

This scheme would make it necessary to clear the terminal active flag when the user's session was signed off (CSSF), or disconnected.

Why IP Address/Terminal ID Static Mapping is Required

CJIS internal security requires that all users be assigned to a functional position, which in turn, is assigned to an organization location. This combination determines how much of CJIS the user has access to. Certain functions within the justice system are limited to a very specific location(s) within the agency's facility. Since data accessed by users in these areas is typically more sensitive, those users are restricted to logging onto CJIS only at terminals located in those areas. This is accomplished by assigning the specific terminal ID's to the functional positions of those users.

Contractor will provide assistance to County in the migration of their application to an IBM pSeries AIX operating system platform where UniKix TPE and UniKix BPE products are used. Contractor will:

- Install and assist in the configuration of UniKix Transaction Processing Environment (TPE) and UniKix Batch Processing Environment (BPE) products on the proposed software and hardware environment.

- Assist in transitioning the migration application source and the generated data conversion programs to the proposed development / test software and hardware environment.

- Correct material application discrepancies discovered and analyzed by County during testing on the proposed development / test software and hardware environment.

- Review the UniKix TPE and UniKix BPE production environment characteristics prior to production cutover

1.9.1. Activity Input(s)

- Most current version of the Production Source Code Set
- Current TEST.CJIS.SOURCE library members
- Specified non-production source code
- Mainframe Application Rehost Source Asset Cataloging Report
- Mainframe Application Rehost Source Audit Assessment Report
- Mainframe Application Rehost Post Assessment Technical Feasibility Report
- Current version production CICS tables
- Current version BMS mapset source
- Current version job control language (JCL) libraries for each environment (Production, QA and TEST)
- VSAM files for each environment
- Sequential files for each environment
- GDG files for each environment
- QA Database extract for input to Data Conversion Test Cases

1.9.2. Activity Deliverable(s)

- List of Detected Missing / Unused Application Source Inventory Components
- Initial UniKix TPE tables production region configuration
- Migrated COBOL programs (also including former Assembler, IDEAL, and Easytrieve Plus programs)
- Migrated BMS maps
- Converted Joblib, Proclib, Cntllib and Parmlib members
- An initial file map
- Data conversion programs for VSAM and Sequential files
- Converted VSAM, Sequential and GDG files
- Customized conversion scripts to run the data conversion programs

- Data conversion programs / scripts for Datacom files
- Installation of UniKix TPE and UniKix BPE on the County hardware and operating system platform as identified herein
- Converted Dataqueries
- Converted system utilities
- UniKix TPE modification to map specific IP address(es) to Term ID(s)

1.10. Activity: Database Migration and Administration

The objectives of this Activity are to provide:

- Resources to implement the tasks involved in establishing the new target Oracle database (in terms of creation and configuration) and in populating data into it from the existing Datacom database and
- Ongoing optimization and support from the testing process through production cutover

Database Conversion

- Create data definition language for Oracle database to replace existing non-relational database
    - o Define target Oracle database model
    - o Create data definition language of all aspects of the target Oracle database(s)
- Establish data conversion procedures for non-relational databases
    - o Identify groups of Datacom record fields whose mapping to Oracle in the data model might be to a date data type.
    - o Generate data conversion programs
    - o Customize conversion scripts
    - o Generate scripts to sort and load converted data for non-relational database into Oracle database
- Provide a Datacom emulation solution made of the following components
    - o A utility with a GUI to maintain a system-wide data dictionary
    - o A code generator that generates a library of functions implementing all the Datacom primitives on top of Oracle
    - o A thin software layer (DBNTRY interface replacement) that replaces Datacom calls and redirects them to the appropriate SQL function(s).
- Consult on third-party products, e.g., sort, print distribution facility, batch scheduler, utilities integration with UniKix TPE and UniKix BPE

Datacom Conversion:

- Contractor will assist the County in determining the preferred version of Oracle for use on the new CJIS platform. Contractor will also provide details of the new Oracle implementation infrastructure on which this choice is based.
- the County will provide Contractor with:
    - o Production CJIS Datacom Data Dictionary BTG statements.
    - o Binary version of CJIS Datacom table data.
- Contractor will:

- o Read the provided data dictionary statements and convert them automatically into a new XML format.
- o Use this new XML data dictionary to create an Oracle database corresponding to the CJIS Datacom/DB database.
- o Generate a DBNTRY compatible interface to allow existing CJIS programs to run unmodified against an Oracle database in an AIX environment. This DBNTRY replacement interface will provide all required Datacom-type access to all CJIS tables.
- o Use the new data dictionary to distinguish field conversion requirements during the data migration phase prior to Oracle import. Text fields are converted from EBCDIC to ASCII; binary / packed decimal fields are converted to a corresponding Oracle supported numeric data type. The native collating sequence (ASCII) is used for displays. The EBCDIC collating sequence will be used for reports, if appropriate.

- The results of the Datacom conversion process will be monitored in the form of Excel files that show the value of every field before and after the translation.
- Data importation programs will be created in the form of COBOL programs that read the prepared (converted to ASCII) data files, and populate the new CJIS Oracle database accordingly using the DBNTRY compatible database interface mentioned above.
- At the end of the process if perceived data conversion problems arise in testing, the Excel files can be used to aid in the troubleshooting / problem analysis process..

Contractor will:
- Determine space requirements for the replacement Oracle databases
- Create the production Oracle database(s) using DDL generated from the Application Source and Data Migration Rehost Activity
- Create test Oracle database(s) using DDL generated from the Application Source and Data Migration Rehost Activity
- Create QA Oracle database(s) using DDL generated from the Application Source and Data Migration Rehost Activity
- Establish database access criteria and access control
- Import exported Datacom data (ready for conversion to target Oracle database(s)) to the IBM pSeries AIX operating system
- Convert Datacom data using tools generated from the Application Source and Data Migration Rehost Activity for:
  - o Various test scenarios
  - o Production Cutover
- Populate the relational database(s) with:
  - o Test data for various test case scenarios
  - o Production data for Production Cutover
- Optimize database definition and operating characteristics in support of testing
- Establish database maintenance approaches

1.10.1. Activity Input(s)

- Oracle Data Definition Language
- Exported Datacom data ready for transformation and subsequent load into Oracle Database(s)

1.10.2. Activity Deliverable(s)

- Production Oracle Database(s)
- Test Oracle Database(s)
- QA Oracle Database(s)

1.11. Activity: Database Administration Staff Augmentation

The objectives of this Activity are to provide ongoing optimization, support, and knowledge transfer for 9 months following production cutover.

Contractor will provide an Oracle database administrator with a fixed number of hours to perform various database administration tasks that would be required by County.

Contractor will:

- Monitor / manage overall database well-being
- Refine the database model and change the database definitions to reflect application functional needs
- Refine the physical database design to meet system storage requirements
- Assist with debugging application / database problems
- Optimize database definition and operating characteristics
- Review / optimize database maintenance procedures
- Maintain database access control privileges
- Work with operations on capacity planning requirements as the database evolves
- Train other staff on database administration

1.11.1. Activity Input(s)

- None

1.11.2. Activity Deliverable(s)

- None

1.12. Activity: General Infrastructure Implementation

NOTE: The following section contains specific hardware information based on the preliminary architecture used to establish this Agreement. The specifics of this hardware and software may be adjusted within the first calendar month following start of project upon mutual agreement between Contractor and the County. If this architecture changes the project plan will be modified to adjust accordingly and the words specific to the current architecture will become obsolete in this Agreement, to be replaced by the language of the revised project plan.

The objectives of this Activity are to set-up, install and integrate the proposed hardware including servers, storage, storage area network, operating system and device management software including:

- The hardware for the target IBM pSeries system environment, disk systems, and network connections for four (4) physical servers.

- The operating systems for the IBM pSeries system environment for the proposed hardware and software for a total of four (4) servers.

- Setup and configure zoning and any other pre-existing or provided County Storage Area Network switch management functions which will directly impact the target environment.

- Setup and configure the pre-existing or provided County IBM disk array and the related management application.

- Setup and configure the file system(s) on the pre-existing or provided County shared storage disk array solution with appropriate space to support the migrated CJIS applications.

CJIS System Network: (see Infrastructure Appendix 10)

The Primary and Secondary Applications and Database servers will connect to the SAN via dual fiber channel connections for redundancy.

Contractor will install, integrate and attach to the pre-existing or provided County storage area network the following hardware for the production and development systems according to the following high-level functional descriptions of the servers:

- Primary Applications Server
- Secondary Applications Server
- Primary Database Server
- Secondary Database Server

These servers will provide services for the following CJIS environments:

- Primary Production Applications Server
- Primary Production Database Server
- Secondary Production Applications Server (Backup through manual failover)
- Secondary Database Server (Backup through manual failover)
- Development and Test Environments
- Quality Assurance Environment
- Batch Job Scheduling
- Printer Services

Servers – General:

- Each server will run IBM's AIX version 5.5 operating system.
- Systems to boot from Storage Area Network.
- Each server will be equipped with a CD-DVD drive for loading software and tape cartridge for creating non-TSM system backups (MKSYSB or other utilities).
- Each server is to have at least two network interfaces (NICs) for redundancy. Both NICs

must support 100MB/1GB Ethernet.
- Each NIC is to be connected to a separate sub-network for redundancy.

Application Servers:

In order to provide service to the CJIS user departments that equals or exceeds the current mainframe service levels, the following architecture should be implemented:

- The following application servers will be installed for the CJIS system:
  - Two production level application environments
  - One QA application environment
  - One Development/Test environment
  - All CJIS application servers will be rack mounted in a secure rack(s) within the county's data center

Database Servers:

- The database servers will be rack mounted in a secure rack within the County's data center.

  The following architecture should be followed for these servers:

  - There will be two production level database environments
  - Both servers will be connected to each of two channels on the SAN via a fiber channel

Job Scheduling Environment:

In that the County is investigating an enterprise-wide batch job scheduling environment, Contractor will assist with installation and integration of the batch scheduling environment in the proposed environment. The batch scheduling clients will be installed on each of the proposed four servers. Contractor will assist the County in integrating those to the new enterprise-wide solution.

Printing Services Environment:

- The Printing Services software solution will be installed on the Secondary Applications Server supporting print archival, viewing and special formatting to replace the mainframe's printing services:
  - Dispatch – Report archival, reprint and online viewing via terminal.
  - DocView – Report viewing/printing via web browser with ability to dissect reports by specified criteria.
  - IP/Printway – Transmits print output datasets to printers or servers.
  - MPI Blue Server – Translation and routing of AFP printer data streams to PCL printers for such applications as D.A.'s subpoenas.
- This solution is to receive printed output from any of the application environments, (Test, QA and Prod) and, as appropriate, will:
  - Route reports to remote printers in requesting departments (which may include police departments throughout the county).
  - Archive reports for subsequent re-printing or historical reference.
  - Store report output for subsequent viewing via Internet browser, divided by user department or agency as required.
  - Properly format various subpoena formats by use of forms overlay templates and route to the specified printer on request.

CJIS User Dynamic DB Access Servers:

- There will be one instance of the Oracle database running on the Secondary Database Server dedicated to providing the CJIS user community with read-only access to CJIS data on a Dataguard mirror of the CJIS database. This access method will replace ODBC connectivity currently in use on the mainframe.

These servers, supporting storage area network and shared disk array storage solution are expected to be comprised of the following hardware solutions:
- Four (4) IBM model p550 servers for Primary and Secondary Application services as well as Primary and Secondary Database Services
- Contractor will install the following operating system with recommended security patches and updates on the four (4) servers listed above and integrate those to the County's pre-existing IBM Hardware Management Console as well as the County's pre-existing redundant storage area network and IBM based shared data disk storage sub-system
- IBM AIX Operating System version 5.5

Contractor will set-up file systems on the County's pre-existing shared disk array solution

1.12.1. Activity Input(s)

- Infrastructure Reference Architecture document
- Server hardware to be installed
- County's pre-existing storage area network and shared disk data disk sub-system
- Operating System Software to be installed
- File system requirements

1.12.2. Activity Deliverable(s)

- Installed hardware for production, backup, development / test, quality assurance, workflow scheduling and print queue management and distribution environments
- Installed operating system for above four IBM p550 servers
- File systems defined and setup on shared disk array in support of above servers
- Final Documentation for the hardware and software configuration listed in the General Infrastructure Implementation section

1.13. Activity: Operational Implementation

The objective of this activity is to provide base operational implementation in setting up the target system in support of the migration.

Contractor may assist the County in implementing any operational components required to establish the target operational environment supporting the migrated applications.

Subject to verification in the Operational Audit Activity, Contractor will install the following software on the target environment established during the General Infrastructure Implementation Activity.

- DataKom for Datacom database interface emulation (RAINcode)
- DB-Update for synchronizing Oracle database and schema

- DMExpress (Syncsort, Inc.) [or CoSort (IRI)] pending County selection
- Micro Focus Server Express (Micro Focus)
- Oracle RDBMS Standard Edition (Oracle)
- Oracle RDBMS Enterprise Edition (for Dataguard on user access environment)
- Perl
- Perl curses
- PVCS Version Manager (Serena Software, Inc.)
- Tivoli Storage Manager Backup Clients (IBM)
- Tivoli Workload Scheduler (IBM)
- UniKix Batch Processing Environment (Clerity Solutions)
- UniKix Migration Toolkit (Clerity Solutions)
- UniKix Transaction Processing Environment (Clerity Solutions)
- uni-SPF (The Workstation Group)
- VisualAge C/C++ (v6 or higher) (IBM)
- VPSX Print Queue Manager (Levi, Ray, & Shoup)
- Communications Server (IBM)

Oracle RAC is not considered to be required for this project. A project change order will be required if the County wants to include Oracle RAC in the configuration.

Contractor will migrate the batch schedule from the current mainframe batch scheduling environment and populate that schedule to Tivoli Workload Scheduler (TWS) on IBM pSeries AIX system or assist County in migration of the current mainframe batch scheduling environment to the County's new enterprise-wide scheduling environment which is yet to be determined.

- County will unload and export an electronic copy of the batch schedule

- Contractor will transform schedule so that schedule uses features provided in the Tivoli Workload Scheduler (TWS), conforms to input format required by Tivoli Workload Scheduler (TWS) load utility or command line interface (in script format), and provides the required information to ease integration with UniKix Batch Processing Environment.

- County will use the Tivoli Workload Scheduler (TWS) load utility or command line interface (in script format) to load the transformed schedule into the Tivoli Workload Scheduler (TWS) repository. County will perform any additional configuration required in the overall environment.

- Contractor will integrate batch scheduler with UniKix Batch Processing Environment.

Contractor will work with County on understanding current accounting and chargeback requirements. Contractor will provide a solution addressing these requirements on the open system platform.

- In order to address those requirements, enhancements may be required to UniKix BPE to recognize parameters in the 'accounting information' area of the positional parameters on the Job Card:
  - T = Test Run
  - P = Production Run

Contractor will work with County and print distribution software vendor to integrate print output with the print distribution software. This integration will consider print output insertion into the print distribution software as well as delivery of the print output from the print distribution facility to printers. This integration will explore various considerations including viewing reports, archiving

reports, managing print, developing / maintaining electronic forms for AFP printers, and establishing printer connectivity.

Contractor will work with County to implement the expected Application Development lifecycle process, software, and access control as it pertains to text editing, source change / version control, testing / debugging, and propagation / promotion across development, quality assurance, and production system environments. This process will match as closely as possible the current mainframe process, which is as follows:

DEVELOPMENT / MAINTENANCE AND TESTING:

Existing programs that are to be modified are copied from the Production source library (PROD.CJIS.SOURCE) into the development/test source library (TEST.CJIS.SOURCE).

All programs that are modified in any manner will have comments entered by the programmer in the change control section under the REMARKS paragraph in the Identification Division (for COBOL), or at the top of the source member (for Assembler). Change notes are also entered by the programmer at the beginning and end of each change within the program source. All change notes include the SR (service request) number.

Following source changes, programs are compiled (or assembled) from the test source library with the resulting object code being stored in the applicable test load library: TEST.LOADLIB for batch programs and subroutines, or TEST.CICS.LOADLIB for CICS programs and mapsets.

USER ACCEPTANCE TESTING - QA:

After successful testing by the programmer, the changed modules are moved into the QA environment for County acceptance testing. The programmer copies the changed components into the appropriate install library:

Install Library	Member Types
INSTALL.CNTLLIB	CNTLLIB JCL members
INSTALL.COPYLIB	COPY source members
INSTALL.EZTPLIB	Easytrieve source members
INSTALL.JOBLIB	Job JCL
INSTALL.MACLIB	Assembler macros
INSTALL.PARMLIB	Job parameter members
INSTALL.PROCLIB	Procedure library JCL members
INSTALL.SOURCE	Program source members

The programmer then sets the QA approval flag for the PANAPT move for his/her components (in a move request). The automated PANAPT process compiles or assembles the program and places the object module into the appropriate QA load library while the other component members are moved by the PANAPT process into the appropriate QA library to await the move to Production following user acceptance testing:

QA Library	Member Types
PROD.QA.LOADLIB	Batch programs and subroutines
PROD.QA.CJISTS.LOADLIB	Online programs
PROD.QA.CNTLLIB	CNTLLIB JCL members
PROD.QA.COPYLIB	COPY source members
PROD.QA.EZTPLIB	Easytrieve source members
PROD.QA.JOBLIB	Job JCL
PROD.QA.MACLIB	Assembler macros
PROD.QA.PARMLIB	Job parameter members
PROD.QA.PROCLIB	Procedure library JCL members
PROD.QA.SOURCE	Program source members

PROMOTION TO PRODUCTION STATUS:

Once user acceptance testing has been completed, the components are moved into Production libraries by the final automated PANAPT process. This is accomplished by setting the production level move flags (2 levels) for the PANAPT move request.

The PANAPT process moves the components into the appropriate production libraries, and, if any of the components are CICS programs, a "NEWCOPY" is issued for each so that CICS begins using the latest version of the program(s).

1.13.1. Activity Input(s)

- Operational Reference Architecture document including a list of software components to be used for the target platform to be used for the rehosted application.
- Software Products installation media (or authorized internet access to Software Products)
- Software Product installation instructions
- Software Product license keys
- Valid user-ids and log-on permissions with sufficient authority to perform installation services
- Unloaded mainframe Batch Schedule

1.13.2. Activity Deliverable(s)

- Installed Software Products
- Converted Batch Schedule
- Configured Print Distribution Environment

1.14. Activity: System Administration Staff Augmentation

The objective of this activity is to provide ongoing AIX and UniKix system administration support following production cutover through nine (9) months after production cutover.

Contractor will provide a system administrator with a fixed number of hours to perform various system administration tasks that would be required by County. This time will consist of onsite and remote administration.

Contractor will:

- Provide administration and operation procedure assistance across systems, storage, and network
- Troubleshoot problems
- Monitor system logs and activity on servers and devices and determine capacity planning requirements
- Provide support services for integration to the County's pre-existing Tivoli Storage Manager enterprise tape back-up solution
- Monitor and manage data back-ups
- Update software with periodic updates in conjunction with County requirements
- Manage Identification / Authentication and Access Control to systems and data
- Qualify system back-up scenarios on a prescribed basis
- Update batch schedule per business requirements
- Monitor and manage UniKix TPE and UniKix BPE application execution environments

- Train other staff on system administration procedures

1.14.1. Activity Input(s)

- None

1.14.2. Activity Deliverable(s)

- None

1.15. Activity: Customer Acceptance Testing

Nomenclature

For purposes of application testing, the County of San Mateo uses the following nomenclature:

Unit Test:

Initial testing of a single transaction application or job to determine that a specific unit functions correctly.

Regression Test:

Testing done subsequent to Single Transaction/Unit testing, to determine whether any functionality in the application was "broken" by any change(s) made to the application.

System/All Business Process Testing:

Testing done subsequent to Single Transaction/Unit testing, to determine whether any functionality in the business process system was "broken" by any change(s) made to the application.

User Acceptance Test:

Testing, by the County user departments and ISD, to determine if the entire application functions as expected, including any changes or enhancements. See **Appendix 11.**

Testing Manageability

To better control the conversion/migration process, related programs and files will be grouped together. Each group will be owned by appropriate County user department. The first two characters of the program name will be used to create the "migration groups." Master list(s) will be created to track the status of each group and all its components which will contain:

- Transaction ID's
- (Batch) Job names
- Main programs
- Called/Linked/XCTL'd/Started programs and subroutines
- Copy members
- BMS map source
- Input files

The following procedures will be followed:

Compiling and Data conversion for QA/Stage 1 User Acceptance Testing:

- All Datacom files will be converted into the QA Oracle database in the new AIX QA environment. (This will be with CJIS QA data and CJIS Production environment software).
- BMS maps will be generated for all online programs.
- All JCL will be converted to UniKix JCL equivalent.
- All programs will be compiled using the new Oracle database in the new AIX QA environment.
- Each function in each program will be tested as well as inter-program functions. Unit testing, as well as regression and system testing will be conducted by the County user and ISD staff and assisted by Contractor as necessary.

QA User Single Transaction/Unit Testing:

Designated the County CJIS users from the appropriate departments and ISD team members will create and document test scripts for the QA testing (Stage 1) and will input test data, as necessary, into both the current mainframe "Sandbox" and the new AIX system QA environments. Testing will be performed for each application in the migration (unit/transaction) groups. The designated the County users will test every function in every program and verify correct operation. The County users will verify that all fields on each screen are properly displayed, and that the data they input is processed correctly as far as can be determined by use of display screens and database queries.

Contractor will generate the above scripts for testing and input them into their new regression testing tool which will be used for comparing the output of the converted system with that from the County's static "Sandbox" system. (Refer to next section: Regression Testing).

Data query replacement tools (coordinated with Contractor) will be utilized for internal tables to be 'viewed' for auditing/verifying results.

Testing results will be compared and all problems will be documented and coordinated with Contractor staff for discussion and/or correction. The testing process will be repeated until all problems are fixed.

Each migration group successfully completing Initial/QA user unit testing will have its status on the master list(s) updated.

After all migration (unit/transaction) groups have been tested successfully, the testing phase will be advanced to the QA User System Acceptance Testing phase.

QA System/All Business Process Acceptance Testing:

The QA System/All Business Process Acceptance Testing process will test the entire converted CJIS system as a full system using (still) a copy of QA data with the Production environment in the mainframe "Sandbox" system and the new AIX QA environment. The designated County CJIS users from the appropriate departments and ISD team members will input test data (created from the prior test scripts), as necessary, into both the mainframe "Sandbox" and the new AIX environments.

Testing will be performed for each CJIS system and as a whole and will be coordinated with all the designated County CJIS users for integrated testing.

Contractor will generate the above scripts for testing and input them into their new regression testing tool which will be used for comparing the output of the converted system with that from the County's "Sandbox" system. (Refer to next section: Regression Testing).

Data query replacement tools (coordinated with Contractor) will be utilized for internal tables to be 'viewed' for auditing/verifying results. Testing results will be compared and all problems will be documented and coordinated with Contractor staff for discussion and/or correction. The testing process will be repeated until all problems are fixed.

For Batch testing, the County users and ISD personnel will verify the following:

- All CICS applications that print, work properly and the printed output is in the proper format, and is routed to the correct printer.
- All pertinent data is reflected on reports. CICS programs that initiate a batch reporting process will be checked to see that the batch job ran at the specified

time, and verified for accuracy of reported data and formatting.

- Reports that are to be archived must be archived properly in the new system, as well as being correctly displayed on a terminal and re-printed from the archival system.
- Reports that are e-mailed to users must not only appear in each user's e-mail inbox, but also be correctly formatted and the data verified as being correct.
- The AWS interface must connect to the AWS test system and successfully transmit both batch and immediate warrants with acknowledgements for each being correctly received from AWS and printed/displayed in the proper format.
- Warrant status data received from AWS must be correctly processed during the database update process.
- All FTP processes must function properly and transfer data to the correct target system in the proper format.
- FTP processes must send files with names that will not be recognized by the target system so the presence and format of the files on the target can be verified, then deleted from the target. (For example, the file FTP'd to the Sheriff's mug shot system must not be named photo.id.)
- The DMV interface for Court abstract transmission must correctly connect to the DMV's test system and transmit to the system. Abstract data must be processed correctly and subsequent reports must contain accurate data in the correct format.

After the QA User Acceptance Testing has been completed successfully, acceptance sign-off will be performed by the County and Contractor for the QA User Acceptance Testing phase. The testing phase will then be advanced to the Production User Unit/Transaction Testing using the mainframe 'sandbox' environment and the new AIX Production platform. This phase will utilize production data and environment as this will provide the most predictable program performance and results.

Compiling and Data conversion for Production/Stage 2 User Acceptance Testing:
All files will be converted into the QA Oracle database in the new AIX Production environment. (This will be with CJIS Production data and CJIS Production environment software.)
BMS maps will be generated for all programs.
All JCL will be converted to UniKix JCL equivalent.

All programs will be compiled using the new Oracle database in the new AIX Production environment.
Each function in each program will be tested as well as inter-program functions. Unit testing, as well as regression and system testing will be conducted by the County user and ISD staff and assisted by Contractor as necessary.

Production User Single Transaction/Unit Testing:
Designated County CJIS users from the appropriate departments and ISD team members will create and document test scripts for the Production testing (Stage 2) and will input test data, as necessary, into both the current mainframe 'Sandbox' and the new AIX system Production environments. Testing will be performed for each application in the migration (unit/transaction) groups. The designated County users will test every function in every program and verify correct operation. The County users will verify that all fields on each screen are properly displayed, and that the data they input is processed correctly as far as can be determined by use of display screens and database queries.
Contractor will generate the above scripts for testing and input them into their new regression testing tool which will be used for comparing the output of the converted system with that from the County's "Sandbox" system. (Refer to next section: Regression Testing).
Data query replacement tools (coordinated with Contractor) will be utilized for internal tables to be 'viewed' for auditing/verifying results.
Testing results will be compared and all problems will be documented and coordinated with

Contractor staff for discussion and/or correction. The testing process will be repeated until all problems are fixed.

Each migration group successfully completing Initial/QA user unit testing will have its status on the master list(s) updated.

After all migration (unit/transaction) groups have been tested successfully, the testing phase will be advanced to the FINAL Production User System Acceptance Testing phase.

FINAL Production System/All Business Process Acceptance Testing:

The FINAL Production System/All Business Process Acceptance Testing process will test the entire converted CJIS system as a full system using (still) a copy of Production data with the Production environment in the mainframe "Sandbox" system and the new AIX Production environment. The designated County CJIS users from the appropriate departments and ISD team members will input test data (created from the prior test scripts), as necessary, into both the mainframe 'Sandbox' and the new AIX environments. One objective for this activity is for County to confirm application compatibility on the IBM pSeries AIX operating system platform and to become familiar with operating/administering/deploying applications on that system.

Testing will be performed for each CJIS system and as a whole and will be coordinated with all the designated County CJIS users for integrated testing. Regression testing will take place during this phase. Contractor will generate the above scripts for testing and input them into their new regression testing tool which will be used for comparing the output of the converted system with that from the County's static "sandbox" system. (Refer to next section: Regression Testing).

Data query replacement tools (coordinated with Contractor) will be utilized for internal tables to be 'viewed' for auditing/verifying results. Testing results will be compared and all problems will be documented and coordinated with Contractor staff for discussion and/or correction. The testing process will be repeated until all problems are fixed.

For Batch testing, the County users and ISD personnel will verify the following:
- All CICS applications that print, work properly and the printed output is in the proper format, and is routed to the correct printer.
- All pertinent data is reflected on reports. CICS programs that initiate a batch reporting process will be checked to see that the batch job ran at the specified time, and verified for accuracy of reported data and formatting.
- Reports that are to be archived must be archived properly in the new system, as well as being correctly displayed on a terminal and re-printed from the archival system.
- Reports that are e-mailed to users must not only appear in each user's e-mail inbox, but also be correctly formatted and the data verified as being correct.
- The AWS interface must connect to the AWS test system and successfully transmit both batch and immediate warrants with acknowledgements for each being correctly received from AWS and printed/displayed in the proper format.
- Warrant status data received from AWS must be correctly processed during the database update process.
- All FTP processes must function properly and transfer data to the correct target system in the proper format.
- FTP processes must send files with names that will not be recognized by the target system so the presence and format of the files on the target can be verified, then deleted from the target. (For example, the file FTP'd to the Sheriff's mug shot system must not be named photo.id.)
- The DMV interface for Court abstract transmission must correctly connect to the DMV's test system and transmit to the system. Abstract data must be processed correctly and subsequent reports must contain accurate data in the correct format.
- A listing of all Datacom data queries that are to be migrated/converted will be created. 'Static' data queries and data queries that perform updating will be identified and tested with Contractor's replacement software.

After the FINAL Production System/All Business Process Acceptance Testing has been

completed successfully, the CJIS Migration project will be advanced to the Stress Testing phase. This phase will utilize production data and environment (still). If problems are found and fixes are made, the FINAL Production System/All Business Process Acceptance Testing will be repeated until all is correct.

After the FINAL Production System/All Business Process Acceptance Testing and the Stress Testing have both been completed successfully, acceptance sign-off will be performed by the County and Contractor for the FINAL Production System/All Business Process Acceptance Testing phase.

1.16. Activity: Regression Testing

The objective of this Activity is for Contractor to implement up to a specific number of regression tests that were defined in the Test Plan and Test Case documents during the Baseline Preparation Activity.

Regression testing will be performed in the new AIX production environment, using a copy of production data which will adhere to the reduced dataset sizing described in this Agreement. Contractor will not be able to use full production data as the time to run tests will be increased to a point where testing would be unreasonably delayed at this stage of the project. Results will be verified against the mainframe "sandbox" system which also will be running the same copy of production data against production level programs.

Contractor will set-up the target test environment including:

- Rehosted application asset source components

- Converted test data for initial data state

- Converted test data state (for comparison of expected results)

- Establishing the required input from the test cases.

Contractor will use Contractor test tools and processes to replay up to a specified number of various County-defined Test Cases in the Test Plan (that County has successfully executed on the mainframe as part of the Baseline Planning Preparation Activity). Contractor will use test tools and processes to compare the mainframe Test Case output results with the AIX Test Case output results.

For cases where result discrepancies arise, Contractor and the County will work together in isolating discrepancy cause and addressing the discrepancy. Once corrected, the test will be rerun until the results match the corresponding run on the mainframe or the discrepancy is explained away to the mutual satisfaction of the County and Contractor.

- For wrong results, Contractor will adapt the application components to correct the discrepancy. The County will assign a person to assist in isolating the cause of the discrepancy.

- For different, but not wrong results (e.g., sorted data in a different collating sequence), Contractor will work with the County to determine whether this difference requires any further adaptation or not.

Incomplete/Inconsistent test cases (e.g., wrong data with wrong programs) will be skipped and returned to the County for correction.

1.16.1. Activity Input(s)

- Operational System for testing

- Rehosted Application Source

- Data Conversion Programs for flat files

- Data Conversion Programs for Datacom files

- Test Plan
- Test Case(s)
- Test Data

1.16.2. Activity Deliverable(s)

- Test Reports
- Responses to Test Reports with discrepancies
- Updated Rehosted Application Source

1.17. Activity: Stress Testing

The objective of this Activity is for Contractor and the County to implement up to a specific number of Performance Stress Tests and Operational Exception Stress Tests (Failover tests) that were defined in the Test Plan and Test Case documents and were validated by County during the Baseline Preparation Activity.

Stress Testing

Stress testing will be conducted to determine whether the system is capable of handling the highest known maximum CJIS transaction volume and much higher without failure. The stress tests should also determine at which level performance begins to degrade.

Stress testing will also include data requests via the user DB Dataguard access server, batch processing, and a failover test to determine whether or not all transactions are processed should a failover situation occur during a period of peak load.

Option 1 – Software Solution

Contractor will provide a software solution that provides customizable, scalable stress testing capabilities.

"Soak" (Endurance) Testing

The County and Contractor will mutually determine if an outside vendor may be beneficial to assist in this testing. If this is determined to be required, the hours for this outside vendor will be added to this Agreement with an appropriate change order.

Soak testing will be conducted in order to determine if the system can sustain extended periods of extremely high processing levels, and to identify any performance problems during and following such a load.

Soak testing will begin with peak levels of transaction processing, increasing up to three (3) times the highest known transaction level where it will be maintained for 24-36 hours. As transaction processing continues, batch processing will also be initiated (load to be determined). At the conclusion of the 24-36 hour period, CJIS team personnel will manually enter a number of transactions looking for any abnormality not previously seen during the system testing phase of the project.

Contractor will set-up the target test environment including:

- Rehosted application asset source components
- Converted test data for initial data state
- Converted test data state (for comparison of expected results)
- Establishing the required input from the test cases.

Contractor will use the transaction input load driver, Contractor test tools, and Contractor processes to replay up to a specified number of various County-defined Test Cases in the Test Plan that County successfully executed on the mainframe as part of the Baseline Planning Preparation Activity. The transaction input load driver will capture response time characteristics for each Performance Stress Test run and will be used to compare response time characteristics.

Contractor will execute a mutually agreed upon number of various Test Cases as described in the Test Plan.

Contractor will compare the results of the test cases with the expected results as generated on the mainframe test.

- For Performance Stress Tests, a test report will be written for each Test Case comparing the response time and throughput characteristics between the AIX-based results and the corresponding mainframe results (as provided by County).
- For the Operational Exception Stress Tests, a test report will be written for each Test Case outlining the test results.

For cases where result discrepancies arise, Contractor and County will work together in isolating discrepancy cause and addressing the discrepancy. Once corrected, the test will be rerun until the results match the corresponding run on the mainframe or the discrepancy is explained away to the mutual satisfaction of the County and Contractor.

- For wrong results, Contractor will correct the application components to resolve the discrepancy. County will assign a person to assist in isolating the cause of the discrepancy.
- For different, but not wrong results (e.g., sorted data in a different collating sequence), Contractor will work with County to determine whether this difference requires any further adaptation or not.

Incomplete / Inconsistent test cases (e.g., wrong data with wrong programs) will be skipped and returned to the County for County correction.

1.17.1. Activity Input(s)

- Operational System for testing
- Rehosted Application Source
- Data Conversion Programs for flat files
- Data Conversion Programs for Datacom files
- Test Plan
- Test Case(s)

- Test Data
- Load Driver and scripts (if applicable)

1.17.2. Activity Deliverable(s)

- Test Reports
- Responses to Test Reports with discrepancies
- Updated Rehosted Application Source

1.18. Activity: Deployment and Cutover

Deployment

1. All CJIS application programs will be compiled and tested on the QA environment in "migration groups" as outlined in the Application Testing section.
2. Once all "migration groups" have passed QA User Unit/Transaction and System Acceptance Testing, everything in CJIS should have been converted. At this point, the full converted system will be promoted to the new Production server. In addition, all libraries will be replicated to both the Test and QA servers, thus establishing a baseline across all three environments.
3. After the promotion of the converted CJIS system to Production, the then current production CJIS database will be copied from the mainframe and converted into the new PROD database where it will be used for the full Production User Unit/Transaction and FINAL System Acceptance Testing cycle. Production data will also be copied to the sandbox environment where it will be used for comparison purposes.
4. The full UAT process will be performed in the Production environment using a copy of production data to ensure all aspects of the system have valid data. Any problems appearing during this UAT phase need to be examined very carefully.
5. At the conclusion of the full UAT phase, the system stress testing process will commence.
6. If any problems are found and fixed during the Stress Testing phase, the Production UAT process will be repeated until all corrections have been made.
7. All involved parties will meet to determine when the cutover will occur as well as the duration of the parallel testing phase.

Cutover

A cutover date that is agreeable to everyone, as well as the duration of the parallel testing phase, will be established during a meeting with all stakeholders following the conclusion of the final, full UAT process. For the cutover, users can select an appropriate weekend window, or utilize a normal CJIS maintenance weekend. Several dry runs for CJIS systems cutover will be conducted until both the County and Contractor are satisfied with the cutover process.

The Contractor conversion team, with ISD personnel, will use information gained during the conversion process to determine if an extended service window will be required to make the cutover to production status.

1. Determine whether to utilize a standard 4-6 hour deployment window, or an extended window if necessary.
2. Establish a realistic roll-back time in case we have to revert to the original CJIS system.
3. For an extended CJIS outage, produce an inmate roster on CD for use in the Maguire

Facility.

4. The final conversion and migration of the production CJIS database to the new production Oracle database will be done.
5. The new CJIS system will be started.
6. Once the new CJIS is up and ready, designated key users will logon and perform initial testing to ensure the system is fully operational.
7. These key users will determine if the cutover is "go" or "no-go."
8. **If new CJIS cutover is NO-GO**
   a.   Notify all users by phone that the current (old) CJIS system is up and ready for use.
   b.   All concerned parties will meet the first business day following the aborted cutover to determine why it failed and plan resolution of the problem(s).

9. **If new CJIS cutover is GO, setup connection to CJIS for all users:**
   a.   If no other application systems remain on the mainframe, flip the CJIS DNS entry to point to the new CJIS system. This will ensure that all users (including police agencies) will connect to the system the Migration Team wants them on. Notify users that the new CJIS is up for use when completed.
   b.   If other application systems still remain on the mainframe, a new CJIS icon will be pushed to all users' desktops so they connect to the new AIX system.
      i.   Advanced coordination with the police agencies will be required in this case, so their IT personnel (usually shared with other city departments) can install the new CJIS desktop icon.
      ii.   Notify users by phone that the new CJIS is ready for use when completed.
   c.   Sufficient support staff will be made available for a pre-determined period of time, either on-site, or on-call, should any abnormal post-deployment problems arise.

The objectives for this Activity are to assist County in planning and implementing production cutover of the rehosted application.

- Assist County to develop a detailed plan outlining dependencies, tasks, and sequencing for final production cutover
- Review production environment configuration set-up
- Participate in multiple dry runs to verify timing
- Provide support for parallel run testing
- Provide support following production cutover for a specified period of time.

Contractor and the County will work together to plan, develop and execute the Production Cutover plan.

Contractor and the County will co-manage, implement and conduct parallel testing runs with data used from production cutover dry run.

Contractor will advise County on overall production cutover readiness following dry runs.

Contractor will provide support after production cutover (via remote access to the environment provided by the County).

Contractor will:

- Troubleshoot issues (via remote access to the environment provided by the County) for a specified period of time following production cutover.

1.18.1. Activity Input(s)

- Rehosted Application Source

- Data Conversion Programs for flat files
- Data Conversion Programs for Datacom files
- Production Data

1.18.2. Activity Deliverable(s)
- Production Cutover Plan Template
- Production Cutover Plan Comments
- Application running in production

1.19. Activity: Parallel Testing

The extent and duration of the parallel testing process will be established prior to deployment at a meeting of all concerned parties.

If it is determined to do parallel testing, parallel testing will begin immediately upon successful cutover in order to keep the data synchronized between the original CJIS system and the converted system.

If Parallel Testing is determined to be required Contractor will provide input to the County in the establishment of the appropriate Parallel Testing Plan.

If it is determined that parallel testing will be done, the County will be responsible for executing the tasks in the following section:

1. Set up multiple terminal sessions for each user in each of the CJIS user departments. Each session will be setup so that it indicates in the title bar of the session window which system, old CJIS, or new CJIS, the window represents:
   a. Current CJIS system
   b. Converted CJIS system
2. Complete cutover to the new CJIS system
3. Coordinate dual data entry. Users will have to log all input to be certain everything is entered into both the existing CJIS system AND the new CJIS system. This is crucial to keeping both databases in sync during the parallel process, because the new Oracle database is the new production database, and the old CJIS Datacom database must be kept current in case a "show stopper "problem surfaces during the parallel testing process. The Migration Team needs to ensure that everything in the new CJIS system is also in the old CJIS system.
   a. Enter all business into the converted/migrated CJIS system and notate each document after entry with date, user initials and system ID.
   b. Re-enter all business into the current CJIS system, using identical information (SMCSOID numbers, booking numbers, case numbers etc.) and notate all documents after entry with the date, user initials and system ID.
4. Comparison of results must be identical unless otherwise noted:
   a. Terminal displays and application behavior
   b. Report output
   c. Interface with external systems
   d. Data verification through database queries

1.20. Activity: Product Training

The objective for this Activity is to provide Product training to application administration and application development people to use of specific products.

- UniKix Product Training

    Contractor will provide standard product training on the UniKix Transaction Processing Environment and UniKix Batch Processing Environment. This standard class addresses administrative and application development related usage topics with UniKix TPE and UniKix BPE. This class is suitable for application programmers, administration and some members of the operations staff.

    This training will be provided at the Phoenix Migration Center at a time mutually acceptable to County and Contractor prior to County testing. [Note: Training at County site can be provided if desired and if project change control is initiated to authorize time to be spent on validating and setting up a training environment. Contractor will provide the County with an estimate of expenses and costs to the County for this training to be conducted in Redwood City.]

    More information on course contents and pre-requisites can be found at: http://www.clerity.com/support/training/index.html

- DataKom Training

    Contractor will provide training course that will provide an application programming overview with guidelines for maintaining / extending the adapted application integrated with the Oracle database. Special focus will be upon regeneration of the DataKom emulation layer as a result of changing database definition including the application subroutines using SQL to access Oracle and Oracle stored procedures, running the DATAKOM command-line utilities, and using the GUI to maintain the data dictionary.

    This training will be provided at the Phoenix Migration Center at a time mutually acceptable to County and Contractor prior to County testing. [Note: Training at County site can be provided if desired and if project change control is initiated to authorize time to be spent on validating and setting up a training environment. Contractor will provide the County with an estimate of expenses and costs to the County for this training to be conducted in Redwood City.]

- Other training will be delivered directly by other software vendors.

1.20.1. Activity Input(s)

- County-supplied Student Profiles

1.20.2. Activity Deliverable(s)

- UniKix TPE Application Development / Administration training materials
- UniKix BPE Application Development / Administration training materials
- DataKom training materials

1.21. Activity: User Training Process

For the user training process, the San Mateo County Training team members and their roles will be identified for each CJIS agency. The County team members will coordinate with Contractor to identify the following for County user department training:

- Software/hardware necessary for training
  - I.E.: Data Query replacement software/jobs
  - Batch reporting processes
- User staff/departments in need of training
  - Identify user units and staff within departments
  - Identify 'lead' trainers
- Use business flow diagrams updated from Testing Function for training phases as necessary
  - Identify which training phases match department units for training
- Create training scripts (on line, batch & replacement data query jobs) as necessary

1.22. Activity: Service Closure

The objective of this Activity is to identify / review the steps required to orderly close the project.

Contractor will conduct a formal meeting with County to:

- Review the tasks and deliverables for this Service which Contractor completed;
- Review any applicable support arrangements and obligations of Contractor and County;
- Obtain County sign-off on Service Completion Form ("Completion Form"). County will sign Contractor's Service Completion Form provided Contractor has completed all tasks and provided all deliverables set forth in this SOW. County's failure to sign the Service Completion Form has no bearing on acceptance of the Service.

Any outstanding issues will be reviewed at this time.

1.22.1. Activity Input(s)

- None

1.22.2. Activity Deliverable(s)

- Service Completion Form

2. County Responsibilities

The County will be responsible for a number of general responsibilities and a number of specific responsibilities for certain Activities. The general responsibilities apply to the specific Activities as well.

General Responsibilities

County will provide a project manager ("Project Manager") to:

- Provide direction and guidance to County's personnel as required by Contractor to maintain project momentum.
- Provide information and resources in a timely manner as needed by Contractor to enable Contractor to complete the tasks described in this SOW.

- Be readily available when required by Contractor for the duration of the Service.
- Provide any needed approvals for County under the Change Control provision below.

The Project Manager will be responsible for receiving any deliverables created as a result of this Service and has full authority to provide any needed approvals for County under the Change Control provision below or otherwise.

The name of the individual who will serve as the Project Manager is Eric Yee.
A timely response (i.e., in a time period that does not affect Contractor's scheduled delivery of the Service) to all requests for information by Contractor will consist of:

- Timely delivery of information and support (i.e., in a time period that does not affect Contractor's scheduled delivery of the Service) from suppliers of non-Contractor sourced equipment and Contractor services as requested

- A timely response (i.e., in a time period that does not affect Contractor's scheduled delivery of the Service) to the review of all Service-related documentation.

- An escalation procedure in the event that timely responses are not provided to Contractor to enable the Service to be completed within the established time frames.

- County's relevant business requirements and Service-level agreements

- Any relevant operational performance standards in use by County related to Service delivery

- An Application owner / developer who possesses good knowledge of the technical application details is responsible to participate actively throughout the Service as required (i.e., from Asset Cataloging through Production Cutover).

- Access to key County personnel, including business, IT and operational staff. County technical staff must have successfully completed the UniKix TPE and UniKix BPE product training courses prior to receiving the rehosted source for Customer Acceptance Testing. County must be prepared to fully participate in specified roles of the project.

- Participation in planning and preparation meetings.

- Adequate workspace for each of Contractor's consultants (for any required County on-site work), as well as access to internet, telephones, copiers, faxes, conference rooms, and printing facilities as reasonably necessary when Contractor consultants need to work on site.

- Parking and access passes as required by Contractor as necessary for Service delivery for any County on-site work.

- Regarding third party products (including, but not limited to open source and or freeware applications), hereinafter, ("Third Party Products") specifically identified as Deliverables herein, County is solely responsible for obtaining all Third Party Products and applicable licenses and rights thereto

  In addition to the above general responsibilities that apply across all Activities, specific responsibilities are addressed by specific Activity below.

2.1. Activity: Service Initiation – Project Preparation and Set-up
- County participates in planning and preparation meetings.

2.2. Activity: Project Plan Creation
- County participates in planning and preparation meetings.

- County will develop a comprehensive and detailed plan encompassing the County activities and tasks of a migration or rehost project. This process will include County resources and will have comparable milestones that synchronize with the Contractor Project Plan. During this project plan creation, appropriate roles and responsibilities will be discussed and assigned across the combined teams of County, Contractor and the third-party hardware and software vendors engaged in the project.

2.3. Activity: Baseline Planning Preparation

- County will meet with Contractor to discuss testing process and to receive test plan and test case templates as a basis for capturing the plan and various test cases.

- County will create test plan and test cases documentation. Test case documentation will contain all of the information required to set-up, execute, and validate the test results.

- County will provide Contractor input scripts for transaction input load driver that can be validated on the mainframe baseline Performance Stress test.

- County will use Contractor test tools and processes to validate County-defined Test Cases in the Test Plan on the mainframe. This validation will use the same source asset to be migrated with a defined initial state and input and will capture a defined completed state (data files) and associated output (e.g., output messages, reports) to be used in subsequent validation on the target IBM pSeries AIX operating system platform. All data required to implement the test must be gathered for later migration and replay on the IBM pSeries AIX operating system platform environment. County will use Contractor test tools to capture input and output messages used to drive CICS application component tests. County will use transaction input load driver for Performance Stress tests.

- County will document Performance Stress Baseline Test results in terms of response time and throughput of the entire test (as opposed to individual test components).

- County will submit test plan / test case documents to Contractor for review of the test plan and all test cases that Contractor is responsible to implement. County will incorporate review feedback into an updated test plan and related test cases.

2.4. Activity: Operational Audit

- County shall provide Contractor with the following prior to Activity initiation:
  - Completed Infrastructure Worksheet
  - List of all software products in use that support the application being rehosted
  - List of any County software standards, recommended practices, or software usage on open system platforms

- County shall work with the Contractor migration team to ensure that all key areas have been identified and are ready to be addressed in the target distributed environment. Contractor and County will work together to discuss the requirements to be met in the target distributed environment via a combination of onsite and offsite meetings.

- County will review and provide input during Contractor's building of a customized Operational Reference Architecture consisting of a one-to-one mapping of operational requirements to the appropriate distributed system target.

- For this engagement, County will select, purchase, and acquire software and relevant software licenses. Contractor will install software products as defined in the Operational Implementation Activity.

2.5. Activity: Infrastructure Audit

- County shall provide Contractor with the following prior to Activity initiation:

  Completed Infrastructure Worksheet

- Contractor and County will work together to discuss the requirements to be met in the target distributed environment via a combination of onsite and offsite meetings.

- County will review and provide input during Contractor's building of a customized Infrastructure Reference Architecture consisting of a one to one mapping of infrastructure requirements to the appropriate distributed system target.

- For this engagement, County will select, purchase, and acquire all hardware elements. Contractor will install hardware components as defined in the General Infrastructure Implementation Activity.

2.6. Activity: Mainframe Application Source and Data Migration Rehost

- County shall:
  - Update the source components to be addressed as part of the overall migration as part of the preparation for project start-up readiness.
  - Update the source components to address the items determined to be missing or unused after any final Asset Cataloging / Source Audit Assessment iteration as part of the preparation for project start-up readiness.

- County will provide knowledgeable personnel to consult during the rehost and provide information in a timely manner. The following areas of expertise are required:
  - User application knowledge
  - Application development knowledge of the specific application logic and data layout characteristics

- County with Contractor's consultation will determine the migrated environment including:
  - Application regions' requirements
  - Open System Hardware and Operating System environment
  - Third party products

- County will:
  - Provide file data layout information and test data (from County QA system) for data conversion tasks. Test data will be limited in size.
  - Provide an up-to-date and complete data dictionary describing the Datacom data layouts.
  - Provide binary transfer of unloaded Datacom file data for data conversion tasks.
  - Prepare County personnel and target environment for receiving the migrated components for testing in subsequent Activities.
  - County will work with Contractor to determine if unique, obsolete or apparent one time dataqueries need to be translated or not.
  - Capture the record count for each Datacom file to be converted to Oracle and provide that information to Contractor to assist in data conversion validation.
  - Provide Data Query application source in same format as provided during the Pilot project.

- County provides a dictionary or a mapping scheme when names derived from existing dataqueries exceed Oracle's limit of 32 characters for any identifier.

- County has provided with the Statement of Work a list of those DataQueries and Dialogs that must be converted and migrated to the new platform. County will use Oracle query tools to address dynamic query requirements.
- Prior to receiving rehosted source components for testing, County will have completed the following.
    - Prepare a set of test plans to be used for the various testing stages including application acceptance.
    - Plan staffing for testing and production cutover.
    - Attend training sessions on the open system environment products (including Clerity Solutions products).

2.7. Activity: Database Administration Migration

- County will:
    - Provide exported Datacom data for Regression Testing Activity
    - Provide exported Datacom data for Customer Acceptance Test Activity
    - Provide exported Datacom data for Production Cutover Activity (Dry run(s), Parallel test run(s), and actual production cutover)

2.8. Activity: Database Administration Staff Augmentation

- County will:
    - Provide supervision and management of Database Administration work
    - Identify and schedule time with other DBA staff for handover prior to end of this Activity

2.9. Activity: General Infrastructure Implementation

- County will:
    - Ready computer room to ensure proper environment control, power, network connectivity, etc. is in place prior to implementation
    - Order, receive, and provide Hardware to be installed by Contractor within the timing of the project plan that will be developed.
    - Work with Contractor on File System requirements, user-ids, and log-on permissions

2.10. Activity: Operational Implementation

- County will:
    - Order, receive, and provide Software Products installation media (or authorized internet access to Software Products)
    - Provide Software Product installation instructions
    - Provide Software Product license keys
    - Provide Valid user-ids and log-on permissions with sufficient authority to perform installation services
    - Provide unloaded mainframe Batch Schedule
    - Provide a person trained on the target batch schedule environment to upload the transformed Batch Schedule.

2.11. Activity: System Administration Staff Augmentation

- County will:
  - Provide supervision and management of System Administration work.
  - Identify and schedule time with other System Administrator staff for handover prior to end of this Activity.
  - Provide remote access to the migration environment to allow remote administration duties to be performed by the identified Contractor staff.

2.12. Activity: Regression Testing

- County will:
  - Complete validation of Test Plan and Test Cases on the mainframe prior to this Activity including scripting out input from an input load driver for online testing
  - Provide exported VSAM and sequential file data
  - Provide exported Datacom data
  - Provide application subject matter expertise, perform initial analysis of application discrepancies and work with Contractor to resolve the discrepancies.

2.13. Activity: Stress Testing

- County will:
  - Complete validation of Test Plan and Test Cases on the mainframe prior to this Activity including scripting out input for an input load driver for online testing
  - Provide exported VSAM and sequential file data
  - Provide exported Datacom data
  - Provide application subject matter expertise, perform initial analysis of application discrepancies and work with Contractor to resolve the discrepancies.

2.14. Activity: Customer Acceptance Testing

County will conduct migration Acceptance Testing at the County site on the target environment. This will ensure that the County validates the functional and performance acceptability of the migrated Asset prior to moving the applications into a production environment.

- County will:
  - Implement staffing for testing as soon as it is possible to begin the testing and will apply testing resources to complete this testing in the scheduled time period.
  - Provide exported VSAM and sequential file data
  - Provide exported Datacom data
  - Execute the test plan, perform initial analysis of application discrepancies and work with Contractor to resolve the discrepancies.

2.15. Activity: Production Cutover Assistance

- Contractor and the County construct the production cutover plan. Contractor will provide a sample template and will consult on questions that County has in constructing this plan.

  This plan will:

  - Identify the sequence of tasks required to implement the production cutover
  - Identify the staff required to implement the dry runs for production cutover and the actual production cutover and list their responsibilities to implement the plan.
  - Schedule timeframes and people where pre-requisites in terms of systems, staff, and migrated components are ready to begin dry run(s) and to implement the production cutover.
  - Identify parallel test run opportunities and align resources to implement such required tests

- Contractor and the County implements dry runs of the production cutover plan.

  The dry run(s) will

  - Provide timing information for the time to implement the production cutover (and the time to delay specific processing while the final transition is taking place). This information will ensure that all data is converted and ready for production in the time allotted.
  - Assess overall readiness and validate the documented process. Any problems are corrected in terms of working out any problems in the process.
  - Provide the start of any parallel testing runs.

- Contractor and the County implements parallel testing runs with data used from production cutover dry run.

  County completes validation of Test Plan and Test Cases on the mainframe prior to this activity.

  County provides exported VSAM and sequential file data.

  County provides exported Datacom data.

  Contractor and the County define parallel test in baseline plan.

  County replays batch workload on both mainframe and IBM pSeries AIX for some defined period of time.

  County compares results, performs initial analysis of application discrepancies, and works with Contractor to resolve the discrepancies.

  County makes decision on overall production cutover readiness.

  Contractor and the County implement production cutover plan.

2.16. Activity: Product Training

- County will provide student profile information to Contractor prior to the class.
- County will provide qualified people for training.

2.17. Activity: Project Management

- The primary point-of-contact between the County and Contractor is Contractor Project Manager.

2.18. Activity: Functional Contact Identification

County will identify County contacts for various functional areas in the rehost project.

Contractor and County functional area contacts will be the focal points for the specified area. This identification is not meant to add project overhead, but is intended to optimize

communication and attention in various functional areas.

Functional contacts must still go through the change control process if project scope / effort changes are desired.

2.19. Activity: Service Closure

- County participates in Service Closure meetings.

3. Assumptions

Contractor will rely on the following assumptions, together with those stated elsewhere in this Statement of Work, in performing the Service. Should any of these assumptions prove incorrect or incomplete, or should County fail to comply with any of the County responsibilities set forth in this Statement of Work, Contractor reserves the right to modify the price, scope, or schedule of the Service. In such a case, Contractor will provide a written estimate of any increased costs to the County, and will await County's response (agreement, rejection or negotiation) before proceeding with any activities covered under such cost increases.

General Assumptions

- Contractor's sole responsibility in the Parallel Testing aspects of this project is to support the County by fixing errors found during the testing.
- Contractor and the County agree to resolve by approving or rejecting change orders within 2 business weeks from the time the change order is presented to the County or Contractor.
- Contractor will itemize all expenses charged to County. Contractor will charge County for local mileage at the rate of $0.44 per mile, and will charge County for lodging, meals, car rental, and airfare (if appropriate) at Contractor's actual cost.
- Contractor's hourly rate for this contract is $150 per hour for this project.
- In the event that County provides Contractor with inconsistent or incorrect test cases, related data or instructions resulting in time spent by Contractor not in the scope of this Agreement, the County and Contractor will discuss this and agree on any additional hours to be added or to have the County execute the test cases after correction with no additional time added.
- If the County requires additional on call pager support, additional fees may be incurred outside of Contractor's standard workday. Contractor's minimum charge per paged incident is one (1) hour of Contractor's consultant's then current billable rate. If Contractor must provide on-site support as a result of a page per this provision, Contractor will charge County for a minimum of four (4) hours of Contractor's consultant's time at the then current time and material billable rate.

- Contractor will assign a project manager to this engagement and will coordinate project management activities with County's project manager. Contractor's project manager will have primary responsibility for coordinating all activities for this Service, including scheduling resources, confirming project activities and that Deliverables are within the scope of this Statement of Work. Contractor's project manager will serve as Contractor's single point of contact for this Service. A Contractor Consultant or Engagement Manager may perform the project manager function as appropriate.

  > Project Team meetings will occur once a week. The project managers will have face to face meetings when they are requested at times, dates and locations agreeable to both parties.

  > Project Status reports will be issued once a week.

- In order to reduce travel and living costs, Contractor will perform many of the tasks associated with different Activities of the Service remotely at Contractor facilities. Meetings will take place via teleconference (where possible) with the County and Contractor representatives or face-to-face at a mutually agreeable location.

- Any Service schedule estimates represent Contractor's commercially reasonable technical judgment based on information available. The actual duration of the Service may vary and may be for a longer period of time depending upon various timings of County implemented tasks (such as initial asset gathering, testing, and production cutover).

- Contractor will make commercially reasonable efforts to meet those critical time frames identified by County and agreed to by Contractor in writing.

- Within the scope of the master services agreement, including providing written notice, Contractor reserves the right to use qualified subcontractors in any role within the Service.

  > RAINcode (of Brussels, Belgium) is a Clerity Solutions subcontractor providing key skills and technology who worked on the Proof of Concept and must participate as a subcontractor for this Service.

  > If County desires to approve additional subcontractors, County must make approval / non-approval known within 72 hours of written notification (including via email) or delays may occur in the project. County must have a reasonable reason for any subcontractor rejection that subcontractor will agree to before Contractor will reject the subcontractor.

- The engagement will begin on a mutually acceptable date.

- The only tasks and deliverables Contractor will undertake or deliver in providing the Service are those specifically set forth in this Statement of Work.

- The terms and conditions of the Services Agreement between the County of San Mateo and Clerity Solutions, Inc. ("Agreement").

- Any application under consideration is active and is used in production today.

- The ability for remote connections to the intended County IBM pSeries production, back-up and test platforms will be available during the project.

- County will license the UniKix TPE, UniKix BPE, the Clerity Migration Toolkit (MTK), appropriate C compiler (e.g., VisualAge C/C++ for AIX), COBOL compiler and runtime, the Clerity Testing Toolkit, an online input driver for stress testing, and other requisite software products. The software license fees for these products and other required software products is not included in this document.

Application and Application Environment Assumptions

- The application is being migrated from an IBM z890-2086 mainframe, (running z/OS). The current mainframe has a capacity of approximately 88 MIPS.

- The specified target operating system and hardware environment for this project is IBM pSeries servers with the IBM AIX operating system

- SyncSort DMExpress [or IRI CoSort] will be used as the sort package on the target platform.

- The expected batch scheduler on IBM pSeries AIX operating system platform is IBM's Tivoli Workload Scheduler (TWS).

- The expected print distribution facility on the IBM pSeries AIX operating system platform is Levi, Ray & Shoup VPSX Print Queue Manager.

- Clerity's bundled Sign-On Table solution will be used for the transaction processing user identification, authentication, transaction access control, etc. on the target platform. Standard Unix Operating System (OS) level security will be used for batch processing identification and authentication. Standard Unix Operating System (OS) level security will be used to manage access to individual files on disk. County will configure security parameters for the system.

CICS Application Components

- All program modules that were part of the pilot (proof of concept) will be discarded and will be freshly converted along with the complete source code asset.

- The CICS online application components will be moved to the IBM pSeries AIX operating system platform and will execute within the UniKix TPE application execution environment.

   The application presentation layer will use the BMS maps of the application or web browser interface to communicate with end-users in the same manner that they do today from CICS with UniKix TPE.

   The business logic layer (implemented as COBOL programs) will be retained. Datacom DBNTRY calls will interface to additional COBOL logic to access the database (DataKom approach).

   For the data layer, the application will have Datacom replaced with Oracle and will continue to use VSAM files as appropriate.

- UniKix TPE tables will be configured from the CICS system converted information. This information will need to be provided in a specific format for conversion. Four (4) production CICS region(s) will need to be rehosted.

- CICS Regions will retain their current Region names in order for jobs submitted from within CICS to execute correctly in the proper environment. The CICS COBOL programs may require adaptation for dynamic JCL customization and submission.

- CICS COBOL programs will be adapted to run in the UniKix TPE application execution environment. The Micro Focus Server Express COBOL compiler will be required to compile the 714 online CICS COBOL programs (52 w/o Datacom/DB calls and 662 w/ Datacom/DB calls) and provide the COBOL runtime for the IBM pSeries AIX environment.
   - The CICS COBOL programs will require further analysis and possible adaptation to address possible collating sequence issues in 14 programs (25 occurrences) and non-printable hex characters in 17 programs (55 occurrences).
   - The CICS COBOL programs require adaptation to specific CICS commands including EXEC CICS ROUTE and some specific error conditions that might not be pertinent to the open system platform.
   - COBOL DBNTRY calls (in 3,949 CICS COBOL programs) will be retained. The calls will be pre-processed to work with the DataKom access method that retains the DBNTRY programmatic interface and maps the request to an Oracle database.

- IDEAL programs (6) will be transformed into either UniKix TPE or UniKix BPE COBOL programs. Other than the one (1) batch IDEAL program converted in the POC, none of the other five (5) IDEAL programs (720 lines of IDEAL code) appear to be referenced by other parts of the application. Further dialogue about source component asset consistency will be required with the County. IDEAL panels (1) will be converted to BMS maps.

- Eight (8) CICS assembler modules will need to be replaced or deleted. A module summary follows:

CICS Assembler Modules	Lines of Code
ABENDI31	
LJUST31	
RJUST31	
S5321P	107
S5411431	133
S54213	
S54216	90
SMCSBMT	
Total Remaining Lines of Code	461

- A new COBOL module will replace the S5321P assembler module. The replacement module will invoke an EXEC CICS INQUIRE request(s) to access UniKix TPE data table information to provide the required features. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

- A new COBOL module will replace the S5411431 assembler module. This module replaced S54114 to address 31 bit addressing. An effort estimate has been included in ASSEMBLER REPLACEMENT line item.

- A new COBOL module or a COBOL function will replace the S54216 assembler module. This module provides date and time status processing. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

- CICS BMS maps (452) will be adapted and retained for processing in the UniKix TPE application execution environment.

- All end-user interactive communication with UniKix TPE will be through existing TN3270 clients and web browsers. [Contractor understands that no support is required for SNA3270 terminal (or emulator) connections.] Contractor understands that the total end-user count is 3,470 and growing; maximum concurrent user count is 360 (and growing).

- The UniKix TPE environment will continue to support the CICS InterSystem Communication (ISC), transaction routing, distributed procedure link, function shipping, and remote asynchronous start processing in supporting Terminal Owning Region (TOR) and multiple Application Owning Regions (AORs) as is currently used with communication between multiple CICS regions.

- IBM's software product Communications Server and its Enterprise Extender feature will provide the SNA over TCP/IP communications stack.

Batch Application Components

- Batch application components will be moved to the UniKix BPE environment. UniKix BPE provides JCL translation, job/proc step processing capabilities, GDG/concatenated data set support, and monitoring/accounting facilities for a production batch application execution environment on the target Open Systems platform.

- Batch COBOL programs will be adapted to run in the UniKix BPE environment. The Micro Focus Server Express COBOL compiler will be required to compile the 184 batch COBOL programs/subroutines (37 programs w/o Datacom/DB calls, 147 programs w/ Datacom/DB calls) and provide the COBOL runtime for the open system platform environment. Minor source

modifications may be required to address syntactical differences between COBOL compilers. We are assuming minimal embedded EBCDIC values in hexadecimal fields, and minimal mixed alpha / numeric key collating sequence instances in the COBOL programs or copybooks under consideration for an application rehost.

- COBOL DBNTRY calls (1,074 calls in batch COBOL programs) will be retained. The calls will be pre-processed to work with the DataKom access method that retains the DBNTRY programmatic interface and maps the request to an Oracle database.

- Batch IDEAL report programs (invoked via the IDBATCH utility) will be transformed into UniKix BPE COBOL programs directly invoked from the translated jobs/procs. IDEAL programs (6) will be transformed into either UniKix TPE or UniKix BPE COBOL programs. If required, the County will be asked to provide assistance in the form of subject matter experts on usage requirements to assist in clarifying requirements and in evaluating the potential alternative approaches.

  > With the exception of the IDEAL program converted for the POC, all IDEAL programs invoked with the IDBATCH utility in JCL are missing from the asset that was provided for analysis.

  > Further dialogue about source component asset consistency will be required with the County.

- Batch Easytrieve Plus programs (5 separate programs with 310 lines of Easytrieve code and 2 instream JCL Easytrieve programs) will be extracted from JCL and converted to COBOL programs or to a utility.

  > Five (5) Easytrieve Plus programs will be converted. They include: SMCCJSDA (67 lines of code) sets up file content as input to the next job step. This program will be replaced with a COBOL program; SMCCOND (27 lines of code) checks a parameter file to pass a return code. This program will be replaced with a COBOL program. SMCONVCC (183 lines of code) which calls batch COBOL program UTXGTXT. This Easytrieve Plus program will be replaced with a COBOL program. ALIAST (28 lines of code) will be converted to COBOL and UTXEROUT (5 lines of code) will be converted to an IEBGENER utility.

  > Two (2) instream JCL Easytrieve Plus programs will be converted. An instream Easytrieve Plus program (81 lines of code) in job CJCJA518 is very similar to the ALIAST program and will be replaced by a separately compiled batch COBOL program. An instream Easytrieve Plus program (16 lines of code) in parmlib member SF2UFOTO will be replaced by a separately compiled batch COBOL program.

  > Although CA-Easytrieve is available on a number of open system platforms, the price for CA-Easytrieve product license fees make it difficult to justify retaining the programs in Easytrieve Plus for just 3 programs.

- Batch assembler modules (7) and common CICS/batch assembler modules (6) will need to be replaced. A module summary follows:

Batch Assembler Modules	Lines of Code
J28212	1080
J28213	1080
SMCHEX	91
SMCJOBN	
SMCPRINT	308

SMCPRNOT	573
VALDAT31	
Total Remaining Lines of Code	3132

- A new COBOL module will replace the J28212 assembler module. The replacement module is used to interconnect with another online region. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

- A new COBOL module will replace the J28213 assembler module. This module is close to being a clone of the J28212 assembler module. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

- A new COBOL module will replace the SMCHEX assembler module. This module basically is a County implemented print utility. An effort estimate has been included in ASSEMBLER REPLACEMENT line item.

- A new COBOL module will replace the SMCPRINT assembler module. This module is basically a SMC-implemented print utility. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

- A new COBOL module will replace the SMCPRNOT assembler module. This module manipulates Parm values and writes them out to a file.

  CICS/batch assembler modules are called from both CICS and batch programs.

- A new COBOL module or a COBOL function will replace the JULDIF31 assembler module. This module calculates the difference between Julian dates. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

- A new COBOL module will replace the TBLSOR31 assembler module. This module sorts a table of records with variable length key and starting position into either ascending or descending order. An effort estimate has been included in the ASSEMBLER REPLACEMENT line item.

  The following assembler modules are part of the asset and do not appear to be used in the application. No effort estimate has been included to replace these assembler modules.

Unreferenced Assembler Modules
ADDTIME
CONVER31
J23213
JLTOG31

- JCL for Joblib, Proclib and Cntllib members will need to be adapted / translated to UniKix BPE macros. UniKix BPE executes the macros during job/proc execution. A total of 232 JCL/Jobs with 743 JCL/Job steps and 48 JCL/Procedures with 219 JCL/Procedure (Proc) steps will need to be converted. There are 120 Parmlib members in 6 Parmlib and Control Card libraries.

- Thirteen (13) separate utilities have been identified in the application JCL across 121 JCL/Job steps and 62 JCL/Proc steps. Some utilities will remain the same; other utilities will require parameter adaptation; other utilities will need to be replaced with other utilities better suited for the IBM p-Series AIX operating system platform.

Any replacement strategy is focused on only the capabilities currently used by the application today, not for the full capability of each utility in a general manner. If required, the County will be asked to provide subject matter expertise on usage requirements to assist in clarifying requirements and in evaluating alternative approaches.

DBUTLTY is used in 6 job/proc JCL steps. DBUTLTY is used to provide general Datacom file set-up/maintenance activities. With Datacom being replaced, this utility will be replaced with either an Oracle utility that would be applicable for the replacement database or with a COBOL program.

o   A COBOL program replaced the single DBUTLTY utility instance in the POC. This program does mass adds to a table.

o   Four DBUTLTY instances are performing backups/restores; one DBUTILTY instance is extracting all data from a Datacom table and unloading to a sequential file. Oracle utilities will replace these DBUTLTY instances.

An effort estimate has been included in the UTILITY CONVERSION line item.

DRREPORT is used in 22 job/proc steps with 5 unique requests. DRREPORT is used to query Datacom files and generate reports from that data. One unique request in two JCL steps was replaced in the POC.
An effort estimate has been included in the UTILITY CONVERSION line item.

EZTPA00 is used in 6 job/proc JCL steps. EZTPA00 is a Computer Associates utility used to execute Easytrieve Plus programs. This utility will be replaced with the name of the replacement COBOL program or utility program on the IBM AIX platform. An effort estimate has been included in the UTILITY CONVERSION line item.

IDBATCH is used in 3 job/proc steps. Two of these procs, QIDBATCH and TIDBATCH, are used in the QA and TEST environments and will be migrated to those environments on the new AIX platform. Four (4) jobs access the remaining Proc (PIDBATCH). IDBATCH is used to execute batch IDEAL programs. Batch IDEAL programs are being replaced. This utility reference will be replaced with the name of the replacement COBOL program or utility. An effort estimate has been included in the UTILITY CONVERSION line item.

IDCAMS is used in 19 job/proc JCL steps. IDCAMS is an IBM utility used for various VSAM/sequential file definition/load/copy/delete capabilities.

o   UniKix BPE supports many IDCAMS features including a number of features used by the application such as IDCAMS REPRO.

o   One IDCAMS instance is involved with printing a specified number of records to SYSOUT. This IDCAMS instance will be replaced with a script to copy "x" records to provide the replacement function.

An effort estimate has been included in the UTILITY CONVERSION line item.

IEBCOPY is used in 2 job/proc JCL steps. IEBCOPY is an IBM utility used for copying partitioned datasets. In this application, IEBCOPY is used to compress files. These steps are not required and will be removed in the JCL.
An effort estimate has been included in the UTILITY CONVERSION line item.

IEBGENER is used in 74 job/proc JCL steps. IEBGENER is an IBM utility used to create or copy a dataset. UniKix BPE supports the IEBGENER utility features used by this application. No adaptation effort is expected.

IEFBR14 is used in 23 job/proc JCL steps. IEFBR14 is an IBM utility used to delete files and catalog entries. UniKix BPE supports the IEFBR14 utility features used by this application. No adaptation effort is expected.

IKJEFT01 is used in 9 job/proc steps. IKJEFT01 is an IBM utility used to execute TSO commands in a batch environment. [Note: For example, many customer installations use this technique to invoke relational database utility operations.] Typically, the migration approach is to replace the IKJEFT01 utility with a direct replacement for the target TSO command to be executed.

San Mateo County uses this utility to execute CLIST scripts. SMSBATCH, calls ACT106; ACT106 is missing from the current application source asset. The remaining CLIST script and JCL remain to be adapted. An effort estimate has been included in the UTILITY CONVERSION line item.

IKJEFT1B is used in 1 job/proc step. IKJEFT1B is an IBM utility used to execute TSO commands in a batch environment. The County uses a CLIST script with a parameter file to append printer information (such as a font) to records. This script will be replaced with a COBOL program. The JCL will be replaced to invoke the COBOL program directly. An effort estimate has been included in the UTILITY CONVERSION line item.

MTPBATCH is used in 11 job/proc steps. MTPBATCH controls CICS resource via batch utility step.

- Job CJSJASMS is opening/closing tables. This utility will be replaced with an Oracle utility.
- Jobs CJSJPABK, CJSJPARS, CJSJQABK, and CJSJQARS are performing backups and restores of Datacom tables. Oracle utilities will be used to replace these utility instances.

An effort estimate has been included in the UTILTY CONVERSION line item.

SORT is used in 18 job/proc steps. SORT is a generic utility used to sort various file types. SORT utility requests will be integrated with Syncsort's DMExpress [or IRI's CoSort] sort product for external sort processing. DCB information must be added to each sort step. Sort card parameters will be adapted using Clerity Migration Toolkit syncconv.pl and Syncsort's SYNCCONV product to be compatible with Syncsort UNIX parameter definitions. [Note: IRI CoSort also provide a sort parameter conversion tool.] An effort estimate has been included in UTILITY CONVERSION line item.

- Two (2) batch jobs send email and will be adapted for the target environment.

  One job (CJSJD505) was used in the POC. Program GENMAIL was created to interface with email.

  The remaining job (CJSJA510) will be updated to invoke GENMAIL as part of the application migration.

- Batch jobs communicate with external applications via file transfer (e.g., FTP), messaging (), or communication mechanisms (e.g., sockets).

- DataQuery queries and dialogs (433) have been identified that will need to be replaced on the targeted open system platform. The County will identify which DataQuery queries are static and which DataQuery queries are parameter driven or dynamic (most of the DataQuery queries are parameter driven) and will need to be rehosted. There are approximately 13 DataQuery queries that run in Batch mode. These DataQuery queries will need to be converted to COBOL when rehosted on the targeted open system platform. They will still need to run in Batch mode when converted. County will use selected tools for dynamic query access. Contractor will help select tools to provide a CA-DataQuery to Oracle View solution for those static queries that are being rehosted. Contractor will provide a script that creates a view in the Oracle database. Contractor will provide a "parameterized" query capability for DataQuery dialogs and other designated queries whose search criteria change from execution to execution. If required the County of San Mateo will provide subject matter experts on usage requirements to assist in clarifying requirements and in evaluating alternative approaches.

- If it appears that the extent and complexities of dataqueries to be migrated are significantly greater than those seen in the POC, the County and Contractor agree to mutually review the hours required and negotiate a change order if it is required.

- The County will provide a name mapping for those DataQuery entries whose names are greater than 30 characters long.

Data Components

- VSAM files (2), disk sequential files (30), and tape sequential files (10) need to be migrated to UniKix TPE VSAM files, disk sequential files, and disk sequential files respectively. Data conversion will need to be applied on master, input, or historical files (not intermediate files). Data conversion routines will be generated to convert EBCDIC fields to ASCII while moving other data fields (e.g., packed decimal fields, binary fields) as is. Data conversion programs will be generated for those files with unique data record layouts. A data conversion program can be reused for all files with the same unique data record layout format.

    Contractor will apply a small amount of test data in one file per data conversion program.

- Data from Datacom/DB tables (560) (with 2,165 total elements and 12,300 fields) will be migrated to Oracle tables.

    Contractor and Sub-Contactor will provide the Data Definition Language (DDL) for the Oracle database that will replace the Datacom database(s). This DDL will create and define all aspects of the Oracle database.

    o The County is expected to provide an up-to-date and complete data dictionary at the onset of the project.

    Contractor will provide the procedure (and/or tools) to transform the Datacom file content into a loadable form for Oracle, and to load the data into the Oracle database. The County will be expected to provide unloaded Datacom data in binary format.

    Contractor will provide a trained Oracle DBA to use the scripts to load the converted files.

    o The production data load procedure will be executed up to four times in the course of the project to support multiple drops for testing and for production cutover readiness.

Testing Considerations

- Contractor will deliver rehosted application components for testing.
    o Contractor application migration team will deliver rehosted application source and data conversion programs on one County system.
    o Contractor operational implementation / system administration team will implement the Application Development Lifecycle and will import the rehosted application source into the County change control / version control system. Software will be promoted to the specific agreed upon system(s) for testing.
- County is responsible for constructing test plans / cases for all testing scenarios. The County defines migration acceptance test criteria within an overall test plan. This test plan identifies a known initial data state, input directives or screen input, and expected report or screen output. This test plan should be verified against the current application environment to insure an adequate baseline for the target environment testing. The information will need to be collected such that the initial data state can be converted on the target platform. Once the application source is migrated to the new platform with the converted initial data state, the objective is to be able to demonstrate compatible results with the same input.
- Contractor and County have joint responsibility in implementing Initial Migration Process test portion of the Application Source and Data Migration Rehost Activity (as described elsewhere).
- Contractor is responsible in implementing Regression Testing Activity (as described elsewhere).
- County is responsible in implementing Customer Acceptance Testing Activity (as described elsewhere).
- Contractor will assist in resolving application discrepancies in all testing tasks.
- Each team responsible for testing or production cutover provides the data conversion tasks in preparation for executing those tasks.

- Initial testing will be with VSAM and / or Sequential files with an upper bound on file size. The test data should not exceed a maximum of 1 GB overall with an upper limit of 50 MB for an individual file. Contractor and County will be able to expedite initial data conversion and testing with more manageable data volume. Only until these test cases with limited data have succeeded, one can consider the tests with complete data.

- A maximum of 4 full-scale data file conversions for production VSAM and / or sequential files are required for the entire Service (e.g., covering all test cases spanning all Activities such as Regression Testing, Customer Acceptance Testing, Production Cutover (Dry Runs, Parallel Test Runs, Final Production Cutover), unless problem resolution dictates otherwise.

- Sufficient disk space will be made available for the data import and data conversion process to be performed.

  In addition to the above general assumptions that apply across all Activities, specific assumptions are addressed in the specific Activity below.

3.1. Activity: Service Initiation – Project Preparation and Set-up

- No additional specific assumptions.

3.2. Activity: Operational Audit

- Contractor's operational audit will be limited to assess the operational requirements specifically related to the application(s) being rehosted by Contractor as part of a larger application rehost migration. If other applications must be considered for this Activity (e.g., where the rehosted application and other applications are consolidated on the same platform), change control procedures will need to be invoked to address an increased scope.

3.3. Activity: Infrastructure Audit

- Contractor's infrastructure audit will be limited to assess the infrastructure requirements specifically related to the application(s) being rehosted by Contractor as part of a larger application rehost migration. If other applications must be considered for this Activity (e.g., where the rehosted application and other applications are consolidated on the same platform), change control procedures will need to be invoked to address an increased scope.

3.4. Activity: Project Plan Creation

- No additional specific assumptions.

3.5. Activity: Baseline Planning Preparation

- Baseline Planning Preparation is done prior to any testing.

- Initial testing planning will need to consider a limited size data files for initial testing as discussed in Regression Testing Activity specific assumptions. All functional testing should be successfully completed first with limited size data files.

- Transaction input load driver will need to support only TN3270 connections for this project.

- The test plan should provide for some independent test threads where some test cases are not dependent upon previous successful test results of previous test cases. In that manner, multiple testers can be executing multiple, concurrent tests in parallel against different data values.

- Initial, individual test case (with reduced data size) execution time should not exceed 30 minutes each on the mainframe.

3.6. Activity: Mainframe Application Source and Data Migration Rehost

- The application asset is materially the same as it was during the source audit assessment done earlier in 2007. Any changes in terms of feature usage, any increased source counts or data counts exceeding 5% in any category, and any source or data counts in new component categories (excluding copybooks and include files) will require project change control procedures to be invoked to address migration considerations in an expanded scope.

- County will be able to identify / reconcile the application source components to be included in the project in at most 2 iterations. These are to be supplied in one delivery to Contractor for each iteration (i.e., not a series of multiple deliveries for each iteration). The reconciliation process needs to get to 0.5% or less missing source components and 0.5% or less unused source components before the project can be successfully initiated.

- All database tables will be stored on a single Oracle instance on the target database.

- Contractor will provide a "data validation" option to its Datacom data conversion tool. When "data validation" is configured, the tool will parse through the input data, will search the input data for definition / type discrepancies such as non-numeric data associated with numeric fields in records or non-compliant date information targeted for date fields in an Oracle database, and will create a report listing the discrepancies. The County will be responsible for correcting any data that is found to be non-conforming to the data definition of an individual field in a file or table. Any work that Contractor has to provide which is caused by data that does not conform to the appropriate data definition of the field element will be considered out of scope. This will result in a change order and increase in the duration of the project.

- All dates to be recognized by the numeric group mapping to a date column will be made of three (Year, Month, Day) or four (Century, Year, Month, Day) fields. The order in which these fields occur is irrelevant.

- Any Datacom records that are duplicates of other Datacom records will be converted and inserted into the replacement Oracle table.

- The IDEAL to COBOL migration addresses the translation of the programs and not integration into the environment, version control system, etc.

- Contractor and the County define and perform an initial migration process test at an agreed upon location. This test plan should be verified against the current application environment to insure an adequate baseline for the target environment testing. This test will be on a small subset of the application and will validate the general migration process. The initial migration process test data can be provided that is of a manageable volume to expedite initial data conversion and testing of both online and batch. **The test data should not exceed a maximum of 1 GB overall with an upper limit of 50 MB for an individual file.**

- During the latter stages of the project, Contractor assumes that the project will need to factor in a one time application update to integrate the rehost changes and County application changes that occurred during the project in a retrofit process. The project assumption is that the changes will be no more than 15% of the modules of the previous baseline with no more than 10% of any module being changed. Should the changes exceed these limits, the County and Contractor will meet and agree on the appropriate change orders.

3.7. Activity: Database Administration Migration

- Initial testing will use QA data. The test data should not exceed a maximum of 1 GB overall with an upper limit of 100 MB for an individual table. Only until these test cases with limited data have succeeded, one can consider the tests with complete data.

- Up to 10 full-scale production Datacom database conversions are required for the entire Service (e.g., covering all test cases spanning all Activities such as Regression Testing, Customer Acceptance Testing, Production Cutover (Dry Runs, Parallel Test Runs, Final Production Cutover))

3.8. Activity: Database Administration Staff Augmentation

- No additional specific assumptions.

3.9. Activity: General Infrastructure Implementation

- No additional specific assumptions.

3.10. Activity: Operational Implementation

- Batch schedule will be unloaded in a CA-7/CA-11 format as agreed upon between County and Contractor.

3.11. Activity: System Administration Staff Augmentation

- No additional specific assumptions.

3.12. Activity: Regression Testing

- Regression Testing by Contractor is limited to a maximum of 140 test cases of the number of unique test cases constructed and validated by the County during the Baseline Preparation Activity. Test cases are validated and are tested on the target IBM pSeries AIX system.

- The maximum number of County defined test cases for Contractor test execution that are inconsistent / incorrect (e.g., incomplete set-up instructions; mismatched initial data state, input data, output data results, output data state; etc.) is bounded for the purpose of this fixed price contract. Inconsistent / incorrect plans above the established threshold will be returned to the County for correction and will either:

  Incur additional fees for subsequent Contractor testing or

  Be skipped by Contractor testing obligations. County will need to implement test set-up and execution for these tests.

3.13. Activity: Stress Testing

Stress Testing will consist of Performance Stress Testing and Operational Exception Stress Testing

- Regression testing for all application components under stress test must be complete prior to any stress testing.

- AIX System under Test will be target production system.

- Input load driver will be suitable for both mainframe CICS and AIX UniKix TPE transaction processing monitors.
- Network bandwidth between load driver and CICS or UniKix TPE is not a limiting factor.
- Test data is limited to 50 GB.
- The maximum number of County defined test cases for Contractor test execution that are inconsistent / incorrect (e.g., incomplete set-up instructions; mismatched initial data state, input data, output data results, output data state; etc.) is bounded for the purpose of this SOW. Inconsistent / incorrect plans above the established threshold will be returned to the County for correction and will either

    Incur additional fees for subsequent Contractor testing or

    Be skipped by Contractor testing obligations. County will need to implement test set-up and execution for these tests.

    Performance Stress Testing

- Performance Stress Testing by Contractor is limited to a maximum of 5 test cases. These unique test cases are constructed and validated by the County during the Baseline Preparation Activity. These validated Test Cases are tested on the target IBM pSeries AIX operating system platform.
- Each test case will complete in 30 minutes (or less) from test start on the mainframe.
- Batch processing in the Performance Stress Test will be done outside of a batch scheduler.

    Operational Exception Stress Testing

- Operational Exception Stress Testing by Contractor is limited to a maximum of 5 test cases. These unique test cases are constructed and validated by the County during the Baseline Preparation Activity. These validated Test Cases are tested on the target IBM pSeries AIX operating system platform.
- All Operational Exception Stress Testing will need to include a functional test exercising all application components that are part of a background application workload prior to introduction of the Operational Exception test itself.
- Each test case will complete in 30 minutes (or less) from test start on the mainframe.

3.14. Activity: "Soak" (Endurance) Testing

- Soak testing will involve continued execution (sustained) of 5 times the highest transaction rate for 24-36 hours. During this time, batch processing (load to be determined) will also be initiated.

3.15. Activity: Customer Acceptance Testing

- County will have trained staff available for Customer Acceptance Testing and Regression Testing. Final user acceptance testing will be performed in the new production environment using a copy of production data.
- Customer Acceptance Testing will include end user participants in the testing.
- County application developers will interact with end users during the testing as part of learning how to support end users on this platform. Contractor support interaction with end users during this Activity will be done jointly with County application development staff and will be specific to problem clarification if County application developers have difficulties in gathering the information themselves.
- Customer Acceptance Testing will include tests for administration and operation of the system environment including system data back-ups, monitoring, and problem analysis / resolution opportunities.

3.16. Activity: Production Cutover Assistance

- A maximum of 3 production cutover dry runs are scheduled. Contractor will provide necessary resources for support. Onsite participation will not exceed a maximum of 5 consecutive calendar days. Remote support will be provided by Contractor in addition to this on a remote basis.
- A maximum of 3 parallel test runs is scheduled. Each parallel test run is triggered by a production cutover dry run. Contractor will provide necessary resources for remote support for up to 5 days after each parallel test run is initiated.
- Contractor will provide 1 person for on-site support for the day before and the day of production cutover.
- Contractor will provide 1 person for on-site support for up to 5 business days following production cutover.

3.17. Activity: Product Training

- County representatives will attend Clerity UniKix TPE software administration and UniKix BPE product administration training courses. The UniKix TPE/BPE product training is included in the estimated fee for up to 8 students. Up to 2 separate four-day classes are to be held in Phoenix, Arizona. All travel and living expenses incurred by County representatives will be at the County's expense.
- County representatives will attend Clerity DataKom training course. The Clerity DataKom training is included in the estimated fee for up to 8 students. One four-day class is to be held in Phoenix, Arizona. All travel and living expenses incurred by County representatives will be at the County's expense.
- County will provide student profile information to Contractor 2 weeks prior to a class for all students attending training.
- Students have the required pre-requisites and can apply the required time for the training.
- Students will be scheduled to apply the training information and results within 2 weeks of training completion either in application development, administration / operation, or testing roles with the UniKix and / or DataKom products.

3.18. Activity: Project Management

- No additional specific assumptions.

3.19. Activity: Functional Contact Identification

- No specific assumptions.

3.20. Activity: Service Closure

- No specific assumptions.

4. Change Control

Should the County or Contractor want to change any Deliverable, the Contractor Project Manager and the County will follow standard change control procedures described in this section. Contractor will complete all work authorized under change control on either a fixed price or a time-and-materials basis (as agreed upon based upon the specific change). Time and Materials will be charged or credited at Contractor's rates as stated in this proposal.

The objectives of change control ("Change Control") are to:

- Assess the impact of scope changes on project schedules, resources, and pricing.
- Provide a formal vehicle for approval to proceed with any changes for this Statement of Work.
- Provide a record of all material changes to the original Statement of Work.

If the County or Contractor requests a change impacting the cost of or time for performance, as determined jointly by Contractor and the County, Contractor and the County will review the Change through the change control process set forth in this Section ("Change Control Process"). For each change, Contractor will complete a change request form (the "Form" or Attachment A to SOW) and provide the completed Form to the County. Both Contractor and the County will approve the Change detailed in the Form, including the impact of the Change on the schedule, resources, and the price of the Service, before Contractor will make the Change. When Contractor and the County accept the Change set forth in the Form, the County will modify its purchase order and such other documents as requested by Contractor. If the County or Contractor does not accept the Change as set forth in the Form (including the impact on the schedule, resources, or price), the Parties will complete their obligations with respect to this Service as set forth in this Statement of Work.

Contractor and the County agree to resolve by approving or rejecting change orders within 2 business weeks from the time the change order is presented to the County or Contractor.

5. Expected Effort and Expenses

The payment schedule will be based on Project Milestones accomplished.

6. Fees, Expenses, Payment Schedule and Terms

Please see **Appendix 12 – Payment Schedule**.

Effort Adjustment for System Inventory Variance

Upon Acceptance of the project by the County and payment of associated milestones up to and including Acceptance related milestones but before paying for production cutover milestones, Contractor will present a report of total hours spent on the project. If the total of these hours is less than the total estimated in the original scope plus any hours added for change orders associated with this project, the County will deduct the total of these unused hours multiplied by the standard hourly rate in this proposal from the final payment due to Contractor.

7. Project Initiation Requirements

To initiate project activities, County will sign the Agreement and issue a Purchase Order which:

- Authorizes payment of an amount sufficient to cover the Service Activities as defined in the SOW – Implementation fees, and project expenses, in the amount of $2,764,020 USD plus applicable sales and/or use taxes, and

    - Contains the following language:

      "This Purchase Order is issued pursuant to the terms and conditions of the Agreement between Clerity Solutions, Inc. (Contractor) and County of San Mateo".

- Authorizes payment of an amount sufficient to cover the Clerity Solutions UniKix software, training and 1st year support services as well as the RAINcode software and 1st year support services in the amount of $328,075.00 plus applicable sales and/or use taxes.

Inclusion of conflicting or additional terms and conditions on the purchase order may delay scheduling of Services.

Attachment A: Change Request Form

Change Request Number: Initiated by: Date:

Description of Change: More details attached: ☐ Yes ☐ No

Impact if Change is not Incorporated: More details attached: ☐ Yes ☐ No

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Alternatives: More details attached: ☐ Yes ☐ No

Proposed Change Type (Check one:)
☐ Problem/Not following plan   ☐ Improvement   ☐ Change in Environment
☐ Scope   ☐ Other (Explain:)

Documents and Deliverables (Check all that apply:)
☐ Contract Agreement   ☐ Payment Schedule   ☐ Delivery Schedule
☐ Project Plan   ☐ Quality Plan   ☐ Work Plan
☐ Functional Spec   ☐ Acceptance Spec   ☐ Purchase Order
☐ Solution Component: _____
☐ Other: _____

Estimate of Impact (Check one:)

☐ Minimal   ☐ Moderate   ☐ Major   Full Evaluation Required: ☐ Yes ☐ No

For Full Evaluation:

Cost to Evaluate: _____ hours   _____ (USD)   Approved for Evaluation:

Recommended Evaluator: ☐ Notified (When?)

Cost to Implement:_____hours   _____ (USD)   Estimate prepared by:

Impact Summary: (Baseline, Functionality, Cost, Resource, Schedule)   More details attached: ☐

Decision: ☐ Approved   ☐ Rejected   ☐ Deferred Until (Date:)

County Project Manager: Signed:

Clerity Consultant: Signed:

Apply to Project Plan Revision: Applied by: Completion Date:

Close Date:

EXHIBIT B – PAYMENTS AND RATES

AGREEMENT BETWEEN COUNTY OF SAN MATEO
AND CLERITY SOLUTIONS, INC.

In consideration of the services provided by Contractor in Exhibit "A", County shall pay Contractor based on the following fee schedule:

1. **SCHEDULE OF CHARGES.**

HARDWARE	$335,718
HARDWARE TAX @ 8.25%	$27,697
SOFTWARE	$416,841
SOFTWARE TAX @ 4.125%	$17,195
ANNUAL SOFTWARE MAINTENANCE/SUPPORT	$109,373
MAINTENANCE/SUPPORT TAX @8.25%	$9,023
SOFTWARE INSTALLATION COST	$24,400
CONSULTING	$2,488,020
TRAINING	$37,150
PROJECT EXPENSES	$238,850
CONTINGENCY RESERVES	$25,000
TOTAL	$3,729,267

** Please see Appendix 12 for full payment information.

- Various Project Milestones and sub-milestones may proceed concurrently; payments timing will reflect this and the Master Project Plan and Schedule.
- Training will be billed during Milestone Phase 13.
- Annual Support Agreements following project-year support will be an ongoing Post-Project Cost, not included in this Schedule of Charges.

Payments shall be made according to each of the Milestone Phases or sub-Phases, when said milestones are completed to the satisfaction of County. Invoices are to be submitted at the conclusion of each Milestone Phase or sub-Phase, as noted in the Payment Schedule.

"Satisfaction of County" is defined to be successful conclusion of each Phase or sub-Phase, as defined by County Technical Project Team leadership approval (i.e. Start of Phase; Delivery of Deliverable; Acceptance of Phase.)

No portion of this project shall be considered to be on a "time and materials" basis, excepting Post-Deployment Support & Maintenance, which shall be as required and mutually determined by County and Contractor.

Hardware & Software purchases shall either be made through Contractor or independently by the County, based on the best available pricing options, as determined by the County. Invoices from Contractor for any hardware and/or software acquired through Contractor shall be billed at the appropriate Milestone Phase as noted in the Payment Schedule. County will acquire hardware & software in a timely manner so as not to disrupt project schedule.

Approval of any Change Orders to Scope of Work shall be at the sole discretion of the County.

Project Expenses shall be documented by written summary of expenses, with sufficient detail or back-up documentation to be auditable in the event of an audit by independent auditors. Contractor shall be reimbursed for mileage at $0.44 per mile, and direct costs for lodging, meals, car rental and airfare. Meals shall be at the County per diem of $35 per day. In no event shall reimbursement of Expenses exceed the maximum Project Expenses limit established in this Agreement. It is expected that Contractor will manage its out-of-pocket expenses frugally and stay within the limit ($238,850). It is the responsibility of Contractor to determine and arrange dates & times of travel by its employees as required to meet business commitments within the agreed-upon Project Schedule.

Project Expenses shall be billed to County with the final 30% "County Acceptance" sub-Phase invoice for each Milestone Phase (example: expenses for Milestone Phase 4.0 "Data & Database Conversion" shall be billed with the invoice for sub-Phase 4c - "County Accepts Data & Database Conversion".) If any dispute arises over acceptance of a sub-Phase, the Expenses portion broken out of said invoice by County and paid separately as a partial payment.

Contractor shall regularly meet with County Project Team leadership and shall establish that each Milestone is being met to County's satisfaction, prior to an invoice being generated for that Milestone. County shall pay invoices within thirty (30) working days of receipt of invoice.

Any disputes which may arise over payment of invoices or completion of satisfactory work related to said invoice(s) shall be resolved by a direct discussion between the Contractor's Chief Executive Officer, and the County's Chief Information Officer. Both parties agree to make good faith efforts to resolve disputed invoices promptly, and in a manner satisfactory to both parties. Work stoppages by Contractor are to be considered solely a last resort, and shall not precede the dispute resolution process established above.

A Change Order process shall be established by the County Project Team Manager for addressing minor changes or additions to the scope of work, as may arise during the project. This process shall also address instances where Contractor contends substantive additional work hours resulted from incorrect data or avoidable errors by the County Project team.

Weekly reporting of hours, progress, and accomplishments shall be made to County Project Team leadership, as established in the Statement of Work.

Project Milestone Phase dates and hours will be finalized following Infrastructure Audit, Operational Audit, and Project Planning tasks. County and Contractor will meet and specifically define payment milestone deliverables at this point. County and Contractor will mutually create a "Milestone Sign-Off Sheet" to be used for recording completion of payment milestones. County will designate a representative(s) who is empowered to sign-off on payment milestones.

County agrees to make every good faith attempt to verify and accept the results of Contractor Milestone deliverables within seven (7) working days of receipt or notification of the deliverable, by Contractor. The County will not withhold Milestone acceptance and payment without good cause, if the payment milestone deliverable objectives (as established in the milestone definitions to be developed above) have been met.

The County will submit payment within thirty (30) days of receipt of invoice conditioned upon the approval of work performed during the billing cycle.

In no event shall total payment exceed an amount of THREE MILLION SEVEN HUNDRED TWENTY NINE THOUSAND TWO HUNDRED SIXTY SEVEN DOLLARS ($3,729,267).

The County will have the right to withhold payment if the County determines that the quantity or quality of work performed is unacceptable.

Contractor agrees that the requirements of this Agreement pertaining to the protection of proprietary rights and confidentiality shall survive termination of this Agreement.

Attachment H
Health Insurance Portability and Accountability Act (HIPAA)
Business Associate Requirements

<u>Definitions</u>

Terms used, but not otherwise defined, in this Schedule shall have the same meaning as those terms are defined in 45 Code of Federal Regulations section 160.103 164.304 and 164.501. (All regulatory references in this Schedule are to Title 45 of the Code of Federal Regulations unless otherwise specified.)

a. *Designated Record Set.* "Designated Record Set" shall have the same meaning as the term "designated record set" in Section 164.501.

b. *Electronic Protected Health Information.* "Electronic Protected Health Information" ("EPHI") means individually identifiable health information that is transmitted or maintained in electronic media, limited to the information created, received, maintained or transmitted by Business Associate from or on behalf of Covered Entity.

c. *Individual.* "Individual" shall have the same meaning as the term "individual" in Section 164.501 and shall include a person who qualifies as a personal representative in accordance with Section 164.502(g).

d. *Privacy Rule.* "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 Code of Federal Regulations Part 160 and Part 164, Subparts A and E.

e. *Protected Health Information.* "Protected Health Information" shall have the same meaning as the term "protected health information" in Section 164.501 and is limited to the information created or received by Contractor from or on behalf of County.

f. *Required By Law.* "Required by law" shall have the same meaning as the term "required by law" in Section 164.501.

g. *Secretary.* "Secretary" shall mean the Secretary of the United States Department of Health and Human Services or his or her designee.

h. *Security Incident.* "Security Incident" shall mean the attempted or successful unauthorized access, use, disclosure, modification, or destruction of information or interference with systems operations in an information system, but does not include minor incidents that occur on a daily basis, such as scans, "pings", or unsuccessful random attempts to penetrate computer networks or servers maintained by Business Associate

i. *Security Rule.* "Security Rule" shall mean the Standards for the Protection of Electronic Protected Health Information at 45 CFR Part 160 and Part 164, Subparts A and C.

Obligations and Activities of Contractor

a. Contractor agrees to not use or further disclose Protected Health Information other than as permitted or required by the Agreement or as required by law.

b. Contractor agrees to use appropriate safeguards to prevent the use or disclosure of the Protected Health Information other than as provided for by this Agreement.

c. Contractor agrees to mitigate, to the extent practicable, any harmful effect that is known to Contractor of a use or disclosure of Protected Health Information by Contractor in violation of the requirements of this Agreement.

d. Contractor agrees to report to County any use or disclosure of the Protected Health Information not provided for by this Agreement.

e. Contractor agrees to ensure that any agent, including a subcontractor, to whom it provides Protected Health Information received from, or created or received by Contractor on behalf of County, agrees to the same restrictions and conditions that apply through this Agreement to Contractor with respect to such information.

f. If Contractor has protected health information in a designated record set, Contractor agrees to provide access, at the request of County, and in the time and manner designated by County, to Protected Health Information in a Designated Record Set, to County or, as directed by County, to an Individual in order to meet the requirements under Section 164.524.

g. If Contractor has protected health information in a designated record set, Contractor agrees to make any amendment(s) to Protected Health Information in a Designated Record Set that the County directs or agrees to make pursuant to Section 164.526 at the request of County or an Individual, and in the time and manner designed by County.

h. Contractor agrees to make internal practices, books, and records relating to the use and disclosure of Protected Health Information received from, or created or received by Contractor on behalf of, County available to the County, or at the request of the County to the Secretary, in a time and manner designated by the County or the Secretary, for purposes of the Secretary determining County's compliance with the Privacy Rule.

i. Contractor agrees to document such disclosures of Protected Health Information and information related to such disclosures as would be required for County to respond to a request by an Individual for an accounting of disclosures of Protected Health Information in accordance with Section 164.528.

j. Contractor agrees to provide to County or an Individual in the time and manner designated by County, information collected in accordance with Section (i) of this Schedule, to permit County to respond to a request by an Individual for an accounting of disclosures of Protected Health Information in accordance with Section 164.528.

k. Contractor shall implement administrative, physical, and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of EPHI that Contractor creates, receives, maintains, or transmits on behalf of County.

l. Contractor shall conform to generally accepted system security principles and the requirements of the final HIPAA rule pertaining to the security of health information.

m. Contractor shall ensure that any agent to whom it provides EPHI, including a subcontractor, agrees to implement reasonable and appropriate safeguards to protect such EPHI.

n. Contractor shall report to County any Security Incident within 5 business days of becoming aware of such incident.

o. Contractor shall makes its policies, procedures, and documentation relating to the security and privacy of protected health information, including EPHI, available to the Secretary of the U.S. Department of Health and Human Services and, at County's request, to the County for purposes of the Secretary determining County's compliance with the HIPAA privacy and security regulations.

Permitted Uses and Disclosures by Contractor

Except as otherwise limited in this Schedule, Contractor may use or disclose Protected Health Information to perform functions, activities, or services for, or on behalf of, County as specified in the Agreement; provided that such use or disclosure would not violate the Privacy Rule if done by County.

Obligations of County

a. County shall provide Contractor with the notice of privacy practices that County produces in accordance with Section 164.520, as well as any changes to such notice.

b. County shall provide Contractor with any changes in, or revocation of, permission by Individual to use or disclose Protected Health Information, if such changes affect Contractor's permitted or required uses and disclosures.

c. County shall notify Contractor of any restriction to the use or disclosure of Protected Health Information that County has agreed to in accordance with Section 164.522.

Permissible Requests by County

County shall not request Contractor to use or disclose Protected Health Information in any manner that would not be permissible under the Privacy Rule if done by County, unless the Contractor will use or disclose Protected Health Information for, and if the Agreement provides for, data aggregation or management and administrative activities of Contractor.

Duties Upon Termination of Agreement

a. Upon termination of the Agreement, for any reason, Contractor shall return or destroy all Protected Health Information received from County, or created or received by Contractor on behalf of County. This provision shall apply to Protected Health Information that is in the possession of subcontractors or agents of Contractor. Contractor shall retain no copies of the Protected Health Information.

b. In the event that Contractor determines that returning or destroying Protected Health Information is infeasible, Contractor shall provide to County notification of the conditions that make return or destruction infeasible. Upon mutual agreement of the Parties that return or destruction of Protected Health Information is infeasible, Contractor shall extend the protections of the Agreement to such Protected Health Information and limit further uses and disclosures of such Protected Health Information to those purposes that make the return or destruction infeasible, for so long as Contractor maintains such Protection Health Information.

Miscellaneous

a. *Regulatory References.* A reference in this Schedule to a section in the Privacy Rule means the section as in effect or as amended, and for which compliance is required.
b. *Amendment.* The Parties agree to take such action as is necessary to amend this Schedule from time to time as is necessary for County to comply with the requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act, Public Law 104-191.
c. *Survival.* The respective rights and obligations of Contractor under this Schedule shall survive the termination of the Agreement.
d. *Interpretation.* Any ambiguity in this Schedule shall be resolved in favor of a meaning that permits County to comply with the Privacy Rule.
e. *Reservation of Right to Monitor Activities.* County reserves the right to monitor the security policies and procedures of Contractor